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ABSTRACT

The final report describes the results of the first year of a 3-year project investigating the effects of using handicapped students as tutors. Detailed descriptions are provided of two main experiments in which learning disabled and intellectually handicapped students tutored students from the regular classroom in sign language and reading. Both parents and teachers were overwhelmingly positive, citing the dramatic increase in reading ability by both tutees and tutors and the increase in feelings of self-worth among handicapped tutors. Two other experiments that featured learning disabled and behaviorally disordered students as peer and cross-age tutors are briefly discussed. Findings on individual progress charts and pre-post test gains indicated that handicapped students can be quite potent as tutors of other handicapped students. Findings of all four studies indicated that both tutors and tutees experience growth in the topic tutored, that socially isolated handicapped students often experienced increased social acceptance as a result of tutoring nonhandicapped peers, and that parents, teachers and tutees perceived reverse-role tutoring as an effective intervention strategy in special education. Extensive appendixes include interview guides, rating scales and checklists, forms, and a literature review. (CL)

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HANDICAPPED CHILDREN AS TUTORS

1983-84 -- FINAL REPORT

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David O. McKay Institute of Education
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HANDICAPPED CHILDREN AS TUTORS

1983-84 -- FINAL REPORT

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Foreword

This final report describes the results of the first year of a three year research project investigating the effects of using handicapped students as tutors. In the first section of the report two main experiments are described in which handicapped students tutored students from the regular classroom. In the second section two additional experiments are reported in which handicapped students tutor other handicapped students.

Because each experiment can be viewed independently, figures and tables are numbered within each separate part of the report, rather than consecutively. Since some of the instruments and procedures are identical from study to study, appendices containing these items are placed at the ends of the entire report, rather than with each individual experiment.

An attempt has been made throughout the report to present a rich mix of all types of data collected during the year. While quantitative "experimental" data form a central corps of each of the "Results" sections, case studies of individual students, parent and teacher comments receive equal emphasis in the report. With the inclusion of many types of data experimenters felt that the overall value of the research would be greatly enhanced. Special education research in the past has often suffered from a total reliance on either inadequate experimental approaches or descriptions of single case studies. One of the purposes of this report is to show that experimental and naturalistic methods can be combined to provide a more useful approach to research in special education.

HANDICAPPED CHILDREN AS TUTORS

1983-84 -- FINAL REPORT

Social rejection and academic deficiency are the two primary problems faced by handicapped students. As many of these students have moved into less restrictive educational environments, these problems have not been solved, but have presented new challenges. While there may be greater opportunities in a regular classroom for interaction between handicapped and nonhandicapped students, there is also greater opportunity for social rejection. And while handicapped students in the regular classroom may benefit from observing nonhandicapped students' academic behavior, there may be less individualized instruction tailored to the specific needs of the handicapped students.

Previous research conducted primarily with nonhandicapped students has suggested the following potential benefits of cross-age and peer tutoring (Osguthorpe, 1980):

1. The instruction can be individualized. Each tutee can move at a separate individual pace. Instruction can be tailored to the specific needs of each tutee based on the results of diagnostic tests and parent/teacher recommendations.

2. Tutors are given decision-making responsibility for another student. Since handicapped students are most often those who receive service, tutoring provides unique opportunities for personal and social development.

3. Peer tutors can interact with tutees in a socially structured setting. When handicapped students tutor their nonhandicapped peers, new social behaviors may form because traditional roles have been reversed.

In spite of demonstrated social and academic benefits, few well-designed studies on tutoring have been conducted with handicapped students. The great majority of tutoring research has focused on the nonhandicapped population. The tutoring studies that have included handicapped students have nearly always used these students as tutees rather than tutors. It would appear that the group of students who have the most to gain from tutoring have been least likely to participate in the research.

The purpose of this project was to investigate the effects on both academic achievement and social acceptance of involving handicapped students as tutors. Four separate studies were conducted, each employing handicapped students in one of the following tutoring configurations:

1. Handicapped children to tutor their nonhandicapped peers in sign language.
2. Handicapped children to tutor younger nonhandicapped children in reading.
3. Handicapped children to tutor younger handicapped children in reading.
4. Handicapped children to tutor handicapped peers in reading.

Using each of the four tutoring configurations, the following questions were addressed during this first year of the project:

1. When handicapped students function as sign language tutors, what are the effects on free-play interaction between handicapped and nonhandicapped students during the regular school day?

2. When handicapped students function as reading tutors, what are the effects on tutors' and tutees' reading achievement as measured by standardized and criterion-referenced reading tests?

3. What are the effects of the four tutoring configurations on nonhandicapped students' attitude toward handicapped students?

4. What are parents' perceptions and attitudes about their handicapped child's participation in the tutoring program?

5. What are the attitudes of teachers and school admini- strators who have participated in and observed the tutoring programs as to the strengths and relative effectiveness of the programs?

In the remainder of this report a full description will be given of each of the four major studies conducted during 1983-84. Following the accounts of individual studies a summary section will be included in which overall conclusions, recommendations and implications will be emphasized.

SECTION ONE:

HANDICAPPED STUDENTS TUTORING
NONHANDICAPPED STUDENTS

Before describing each separate study, some summary impressions and statistics may be appropriate. As researchers we have been extremely pleased with our reception in Davis District. Both regular and special education staff have been refreshingly cooperative and open to the project. Because regular class students are essential to this project as tutees, this cooperation has been particularly important.

A total of six elementary schools in Davis District participated during the first year. Of these six, two were essentially for comparison groups with four schools implementing tutoring programs. Including both treatment and comparison groups, a total of 115 handicapped students participated from Davis District. Of these 115, 30 were attending self-contained classes for intellectually handicapped (IH), 25 were in self-contained classes for learning disabled (LD), 30 were in self-contained classes for behaviorally handicapped (BH) and 30 were attending a resource program. In addition to the handicapped tutors, 82 first grade students and 50 upper grade elementary students participated either as treatment or comparison tutees. If we consider that four tutors tutoring for 15 minutes equals one person hour, approximately 800 tutoring hours of reading instruction and 400 tutoring hours of sign language instruction have been delivered as part of the studies conducted in Davis District.

Experiment 1:

Handicapped Students as Sign Language Tutors

The purpose of the first experiment was to measure the effects on social acceptance of having handicapped students tutor their regular class peers in sign language. Specific research questions for this study are previously stated in the introduction of the report. Because of the uniqueness of the two settings involved in experiment one, the results of the experiment are reported in two separate studies. In Study 1 a group of 17 mentally retarded students taught sign language to their upper grade elementary peers from the regular clasroom. In study 2 a smaller group of 7 learning disabled students participated as sign language tutors for their regular class peers.

While the first study reported in this section is replication and extension of a previous study (Osguthorpe and Custer, 1981), the second study is unique in several respects. It is common knowledge that sign language is frequently used with retarded students as a communication aide and speech elicitor. With learning disabled students, however, signing has seldom been used in the classroom. In the initial planning stages of the research one special educator felt that sign language would be highly inappropriate for LD students because it would further set them apart as "handicapped. There was also some concern regarding parent reactions to their LD child learning sign language, reducing the amount of time available for reading instruction which many view as their child's most serious deficiency. For these reasons the data collected on sign language tutoring are reported separately for mentally retarded and learning disabled students.

METHOD

A ten-month project was proposed to investigate the effects that using handicapped students as tutors of nonhandicapped peers has on social acceptance. Sign language was chosen as the topic for tutoring for the following reasons:

1. Sign language was a new and novel skill to most students, handicapped and nonhandicapped, and seemed encouraging to students in the past. Such a new skill also enabled the handicapped students, with some extra training, to be more advanced than the tutees in sign language.

2. It was noted in the Osguthorpe and Custer project that sign language was one skill that fifth and sixth grade intellectually handicapped students were able to learn and teach. The following section describes the experimental setting, students, materials, instruments and procedures used in implementing the study.

Design

Davis School District, located north of Salt Lake City, agreed to participate in the study. The district is primarily Caucasian middle class composed of agriculture and light industry occupations. Meadowbrook and Whitesides Elementary schools were elected to participate in the study based on the distribution of students and similiarity between the two schools. Meadowbrook was randomly selected from the schools in the district having self-contained classes to serve as the experimental school while Whitesides was selected as the control school. Both school, although given the opportunity to decline, chose to participate.

The experimental design can be seen as a version of a nonequivalent control group design. The main variance from a conventional nonequivalent control group design is that the posttests were repeatedly administered during the treatment period and the number of posttests administered to the treatment group differed from the number of posttests administered to the control group. This is explained in the procedures section.

Setting

As noted previously, arrangements were made with Davis School District for conducting the study. Two schools were involved in this study; Meadowbrook Elementary as the experimental school and Whitesides Elementary as the control school. These schools were selected because total enrollment and the ratio of handicapped to nonhandicapped students were comparable: Meadowbrook enrolling 425 students with a ratio of 17 : 408 handicapped students, and Whitesides enrolling 626 students with a ratio of 16 : 610 handicapped to nonhandicapped students. Both self-contained IH (intellectually handicapped) classes represented approximately equal portions of the school district: Meadowbrook bussing students from the southern portion of the district and Whitesides bussing students from the northern portion of the district. Both schools had similar populations, primarily Causasion middle class composed of agricultural and light industry occupations.

Although the two schools were similar regarding administrator and teacher commitment to the program, the experimental and control groups possessed unique characteristics. Meadowbrook Elementary (the experimental school) had many windows creating a bright and pleasant atmosphere when in the square-shaped building. One double sized classroom housing the intellectually handicapped was in the center of the school with all of the other classrooms bordering it. With entrances into two opposite hallways, students from most other classes in the school passed by this room on the way to recess.

The interior of the IH classroom was decorated from floor to ceiling in what appeared to be layers of arts and crafts projects created by the students. Half of the room was arranged with traditional rows of desks with the teacher's desk, shared by the full time aide, to the rear. The centerpiece of the other half of the room was two paint splattered easels which usually displayed their latest user's creations. Against the far wall was a trampoline which, when not covered with on-going craft projects and a balance beam, was pulled away from the wall for noon hour recreation. One of the most striking characteristics of the room was the variety of brilliant colors found in the numerous student projects on the walls, other wall hangings, the carpeting, and the posters and signs which were also a part of the layers of materials on the walls. While the classroom was cluttered and almost chaotic, a compensating order was created by Mrs. Beckstein, the teacher. She allowed for a variety of avenues of expression for the students while simultaneously maintaining a definitive system of rules, schedule and procedure.

The atmosphere at Whitesides Elementary's IH class was equally unique. The IH class, taught by Mrs. Hammer, was found at the end of the main hallway in the school. Traditionally arranged desks were centered in the room. Mrs. Hammer's desk was in the front with one student's desk pushed up tightly against hers. The back wall was windows with three foot high shelving beneath. The other three walls were colorfully decorated with a bulletin board on one, posters on another and art work on the other. The classroom aide's desk was placed at the rear of the room with a table adjacent. A typewriter, used as a reward for completed work rested on the table. While the room's many decorations revealed an element of freedom and creativity fostered by this class, an atmosphere of rigid rules kept both the students and teacher reserved and on schedule.

Although both of these teachers and their classrooms differed in style, they shared concerns about their students' degree of social interaction and encouraged any activities, formal or informal, to achieve positive social contact with regular class students.

Students

All of the students in each of the IH classes participated in the study: the experimental group of 17 students at Meadowbrook and the control group of 16 at Whitesides. These classes contained students with several different handicaps according to the state of Utah guidelines for classifying handicapped children: Meadowbrook having 11 intellectually handicapped, 5 severely handicapped and 1 multiply-handicapped, while all 16 students at Whitesides were intellectually handicapped. Meadowbrook's IH students ranged from fourth to sixth grade level while Whitesides's IH students were all fifth graders.

The 17 nonhandicapped students included as tutees in the project (students at Meadowbrook) were selected from age mates of the handicapped students in the experimental group. Three additional nonhandicapped students were also identified to be used as alternate tutees in case of absences of any of the original 17.

Materials

Training materials for implementing the project were further developed from existing materials utilized in previous research. Prompt cards were used on which the handicapped tutor saw a photograph of the object or word, graphic representations of the hand shapes (signs), and the printed word to be signed. The reverse side of the prompt cards consisted of only the printed word to be signed. Groups of cards were bound with large rings and mounted on small, cardboard table easels enabling the cards to stand independently and the tutor to flip from one card to the next.

Two table games were also used -- a version of Bingo and a simple board game. The Bingo game incorporated a stack of sign cards consisting of the graphic representations and printed words of signs. Before placing a token on the Bingo card, each player picked a card and signed the appropriate sign to the other players. Fifty of the signs being learned were included on these cards. The other table game consisted of a board on which a colorful path of squares stretched from one side of the board to the other. Every third square had either a star or a question mark on it (an equal number of each across the 35 squares). Two stacks of cards were created, one with stars on the back and one with question marks. Graphic representations of various signs and their respective printed words were found on the reverse sides of the cards. When a player landed on one of these special squares, the appropriate card was to be picked and signed. Dice were used to move small, plastic toys from one square to the next trying to reach the end of the path as fast as possible.

Additionally, study packets were created for each handicapped student. These packets included graphic representations of the signs along with the respective printed words.

The sign language vocabulary used in these materials included numbers, colors, the alphabet, a number of complete sentences and 148 nouns and verbs familiar to the handicapped children. The complete sign language vocabulary list used in these materials is shown in Appendix A, the Meadowbrook Sign Language Test.

Instruments

Five instruments were used to assess either the degree to which the treatment was being effectively administered or the extent to which social interaction was enhanced. Each instrument is described below.

Free-Play Interaction Form. Free-play interaction data between handicapped and nonhandicapped students were collected for each handicapped tutor. These data included the date, the duration of time a handicapped student was interacting with a nonhandicapped student, how many students were involved in the interaction, the names of the students involved (when possible), notation if the handicapped student was interacting with a tutee or children not in the tutoring program, and a positive or negative interaction judgement rating from the observer.

Positive interaction was defined as follows; any time a handicapped student experiences contact with a nonhandicapped student in such a manner that it reduces social distance, displays mutual friendshipping, and/or dissolves subordinating or superordinating roles between the student. Negative interaction was defined as any instance of interaction contrary to the above stated positive definition. An example entry is shown below:

Date: 3/2/84

Duration: 5 minutes

No. of students: 3 students - 2 IH, 1 fifth grader

Names of students involved: Nancy and Donna

Tutee or other: Tutee (1)

Judgement: + (positive)

(See Appendix B for Free-Play Interaction Form.)

Parent Phone Interview Guide. A parent phone interviews guide was created consisting of 10 forced-choice and 5 open-ended questions. The forced-choiced questions elicited the parents' general reactions to the tutoring program: their child's feelings about their tutoring experience, any noticeable changes in social interactions, and the parents' feelings and recommendations pertaining to the program. Such questions were, "Did your child mention anything to you about the tutoring program? Yes or No", and, "How would you describe your child's feelings toward the project? Very positive, positive, negative, very negative, no opinion". The open questions elicited additional information pertaining to previously answered forced-choice questions. The interview was designed to require no more than 15 minutes to administer (see Appendix C for the Parent Phone Interview Guide).

Tutee Interview Guide. A tutee interview guide designed to be administered individually consisted of 18 open-ended questions pertaining to the tutees' feelings toward handicapped children generally, towards those who were the tutors, and their perceptions of any changes in the handicapped students' feelings or attitudes towards nonhandicapped students. Such questions were, "What have you learned about mentally retarded kids?", "What do you think the tutors learned from this experience?", and, "Do you feel differently toward mentally retarded kids now that you've had this experience?" The interviews were designed to require no more than 20 minutes to administer (see Appendix D for the Tutee Interview Guide).

Tutoring Skills Record Form. Data were collected for each of the handicapped tutors pertaining to their success tutoring sign language. For each session of tutoring the aide judged the tutors' success on eight variables such as, "How well do they demonstrate each sign? Poor, good, or excellent" and "How well do they monitor the learners performance? Poor, good, or excellent." (see Appendix E for the Tutoring Skills Record Form).

Sign Language Test. A complete list of all vocabulary words, letters and sentences taught to the tutors was compiled as an instrument for sign language skills. The words were organized on the page in the groupings used on the prompt cards (see Appendix A for Sign Language Test).

Procedures

The procedures used in selecting students for the project, training the tutors, and conducting the tutoring sessions are described below. Additional explanation of procedures used for administering each instrument and analyzing the data is also given. For a summarized schedule of the procedures, see Appendix F.

Selecting the students. All of the students in each of the IH classes participated in the study. The nonhandicapped students included as a part of the experimental group were selected by asking the regular classroom teachers to nominate students whom they thought would benefit from participating in the program and whose regular academic work would not suffer from participation.

Parents of each student, nonhandicapped and handicapped, participating in the study received written explanation of the study describing their child's potential involvement as a tutee or tutor. Parents who agreed to have their child participate in the study signed a Parental Consent Form (see Appendix G).

Training the tutors. Training of the tutors began two months prior to the actual tutoring. A special area for the sign language project was designated and separated from the rest of the room by temporary wall dividers. During the first month of training the handicapped students were taught the alphabet, their names and several simple signs. Two training sessions of approximately 30 minutes in length were conducted each week involving the entire group of 17 handicapped students. No materials were used for the first three weeks of training as the sign language teacher taught the beginning signs by demonstrating one at a time. The handicapped students were taught to be helpers by checking each other to see if their classmates were signing correctly. If a classmate was not signing correctly the helper would demonstrate the sign again. If the classmate continued to sign incorrectly the helper would demonstrate the sign again and, if necessary, help the classmate position the hand correctly. Once the classmate signed correctly the helper was encouraged to praise correct signing. The sign language teacher organized the helper checking so that only one handicapped student was checking at a time.

The sign language teacher also spontaneously created a number of sign language learning games. One such game was a "Pass the Sign" game. The teacher announced what she was about to sign and with her hands in the appropriate position, she touched one of the student's hands. That student then created the sign and passed it to a classmate in the same manner. This continued until all of the students had demonstrated the sign.

During the fourth and fifth weeks the classroom aide for the program began working. The sign language instructor separated the class into groups of approximately five or six students. The aide began learning the signs by joining the handicapped students' learning groups as well as meeting with the sign language teacher for an additional 15 minutes each training day. During these additional 15 minutes the aide was able to learn the tutoring procedure and enough signs to begin teaching the handicapped students on a daily basis.

The training period during the sixth, seventh and eighth weeks was more individualized -- the aide working with just one or two students at a time for about 15 minutes each. Often during this time the handicapped students worked with each other using the prompt cards interchanging alternately the role of tutor and tutee. The aide taught the handicapped students the procedure for tutoring as is shown below:

1. The tutor demonstrates the particular hand shape (sign) for the letter or word being taught. (This was provided on the prompt card.)

2. The tutor asks the tutee to do the sign with the tutor.

3. The tutor asks the tutee to do the sign alone.

4. After the tutee has mastered a group of ten signs, the tutor calls the aide for a mastery check. If the tutee has mastered the group of signs, the tutor is instructed to proceed to the next group of promt cards.

Mrs. Beckstein permitted time for the aide to continue training throughout the duration of the year in order to keep the tutors ahead of the tutees in learning new signs. Two-thirds of the vocabulary were taught to the tutors after the tutoring sessions had begun.

Because the aide was hired part time for this project and worked well with the students, the school hired her for the remainder of the time during the week. This allowed the aide to develop relationships with each child and to organize the sign language project to be compatible with both the students' and the teachers' classroom schedules.

Tutoring sessions. During a 10-week period the handicapped students tutored the nonhandicapped students in 15-minute afternoon sessions, three days a week. Five 15-minute sessions with a 5-minute transition period between each was necessary in order for all of the students to tutor.

Prompt cards were organized by the aide, assuring that each of the companionships worked with each set of prompt cards. By using the prompt cards the handicapped student had a constant reminder of how the various hand shapes were to be made while the nonhandicapped child was assured to know what word or letter was being taught. After the first three sets of cards were learned the companionships were able to play a sign game during the tutoring time once a week. These games were used such that the tutor, although playing the game with the tutee, maintained the tutoring role. Throughout the tutoring the aide conducted mastery checks before each companionship proceeded to the next set of prompt cards. The aide also monitored the companionships to assure that the handicapped students were staying on task -- following the basic tutoring procedures, giving praise for correct signing, etc.

Free-play observations. It was necessary for the observer to be well acquainted with both the tutees and the tutors in order to identify them from various distances on the playground. Therefore, the aide was trained as the free-play observer. This allowed for a greater number of observations to be conducted as the aide was able to observe almost every lunch and recess free-play time. A second observer also familiar with the children conducted five observations to serve as a reliability check. Because no rating scales were included in the Free-Play Interaction Form reliability was calculated by determining the percentage of all accounts of interaction noted and judged the same by both observers. This resulted in a 98% reliability.

Observations were also conducted at the control school in the same manner by two observers; one being the second observer at the experimental school and the other being a third observer for the study. Again reliability was calculated as described above resulting in 99% reliability. Reports of observations of free-play interaction were also collected from the handicapped students' teachers. Because of limited time and the logistics of conducting observations at recess time, when both schools had the same recess times, fewer observations were conducted at the control school. This procedure was adopted after several observations and teacher interviews were conducted at the control school which indicated there was zero interaction between the handicapped and nonhandicapped students. Therefore, one "Pretreatment" and three "during treatment" observations were conducted at the control school while 20 "pretreatment" and 68 "during treatment" observations were conducted at the experimental school.

Free-play observation data were analyzed by dividing the observations into series of 10. This was done in order to monitor change in interaction both "pre" and "during" treatment. Eighty-eight observations were conducted at Meadowbrook; 20 "pre" and 68 "during". Therefore, two series of ten observations were defined "pretreatment" and seven series of ten were defined as "during treatment". While the last series "during treatment" had two less observations, the total minutes of observation were comparable to the other series. The following information was calculated for each series of ten observations.

1. Total number of positive and negative incidents per student and for the total of 17 students.
2. Total amount of minutes of positive and negative interaction per student and for the total of 17 students.
3. Total percentage of interaction minutes involving tutees.
4. Percentage of total observation time each child was interacting positively.
5. Percentage of total observation time each child was interacting negatively.
6. Percentage of total observation time positive interaction occurred in the group of 17 students.
7. Percentage of total observation time negative interaction occurred in the group of 17 students.

Once this information was collected, mean scores reflecting the above information were calculated for the two divisions of these series of observations; "pretreatment" and "during treatment" means.

Two paired t-tests were calculated comparing "pretreatment" with "during treatment" mean percentages of positive and negative interactions.

Parent interviews. During the last week of school the tutors' parents were interviewed over the phone by one of the research assistants whom the parents had met once before at an evening parents' meeting. One of the parents of each tutor, usually the mother, was interviewed. The interviews required approximately 15 minutes to administer (see Appendix C for the Parent Phone Interview Guide).

Tutee interviews. At the end of the study the nonhandicapped tutees were interviewed by two individuals unfamiliar with the children. The interviews, conducted privately in the teachers' lounge, followed the Tutee Interview Guide found in Appendix D and required approximately 20 minutes to administer.

Analysis of both parent and tutee interviews required data analysis for each item: the number of responses given for each possible response for each item. Qualitative data collected from open-ended questions were analyzed by creating categories of responses given and categorizing the various responses accordingly. Once catagorized, percentages of responses in each category of each answer were calculated.

Assessing tutoring skills. The tutoring skills of each of the intellectually handicapped tutors were assessed on the following items as found on the Tutoring Skills Records Form:

How well do they demonstrate each sign.
How effective is their feedback to the learner.

How well do they monitor learner performance of each sign.
How enjoyable is the tutoring task for the tutor.
How enjoyable is tutoring for the tutee.

Each tutoring day during the 5-minute transition period between each of the five sessions, the aide evaluated the tutors. Analysis of data from the tutoring skills record was made to compare success rates of the five different skill items rated. The three levels of rating were numerically defined as follows; poor=1, good=2, excellent=3. Totals and means for each question were calculated for each day of tutoring. Grand means were also calculated for each of the five skills representing the 30 days of tutoring (see the Tutoring Skills Record Form, Appendix E.)

Sign language testing. During the last two weeks of school both the tutors and tutees were administered the Sign Language Test by either the sign language teacher or a sign language specialist. Prior to administering the test, the sign language specialist, sign language teacher and the aide met to assure agreement for the correct signs elicited from the test. The testers then met individually with each student. After asking the student to make each sign, the tester circled any that were signed incorrectly or not at all. If the student, particularly a handicapped student, appeared unsure about which sign was being elicited, the testor used the corresponding prompt card showing the student the photograph as an additional stimulus for what was to be signed. Each test required approximately 15 minutes to administer.

The Sign Langauge Tests required the calculation of a percentage of known signs, a word score mean and a sentence score mean for each child.

These scores were then totalled and the mean calculated for each group, tutors and tutees (see Appendix A for the Meadowbrook Sign Language Test).

RESULTS

The following section discusses the results obtained from the five measurements administered in the study: Free-play observations, parent interviews, tutee interviews, sign language tests and tutoring skills records. A case study on one of the handicapped tutees is also included.

Free-Play Observations

The amount of positive interaction which occurred in the experimental and control groups during observed free-play time "pretreatment" and "during treatment" is summarized in Figure 1. While the horizontal axis represents the two points of "pre" and "during" treatment, the verticle axis represents the group mean percentage of positive interaction. The results of the t-test indicated that the experimental group's mean percentage "during treatment" was significantly higher than the "pretreatment" mean. (T = 2.66, P = .017, DF = 16). The control data indicate no significant difference between "pretreatment" and "during treatment".

Figure 2 delineates further the mean percentages of positive interactions across time for both the experimental and control groups. The horizontal axis is divided and labeled 1 through 9, representing the 9 series of ten observations which were described in the procedures section. The first two series represent "pretreatment" observations while the remainder represent observations "during treatment". The vertical axis represents the mean percentage of interaction time. Figure

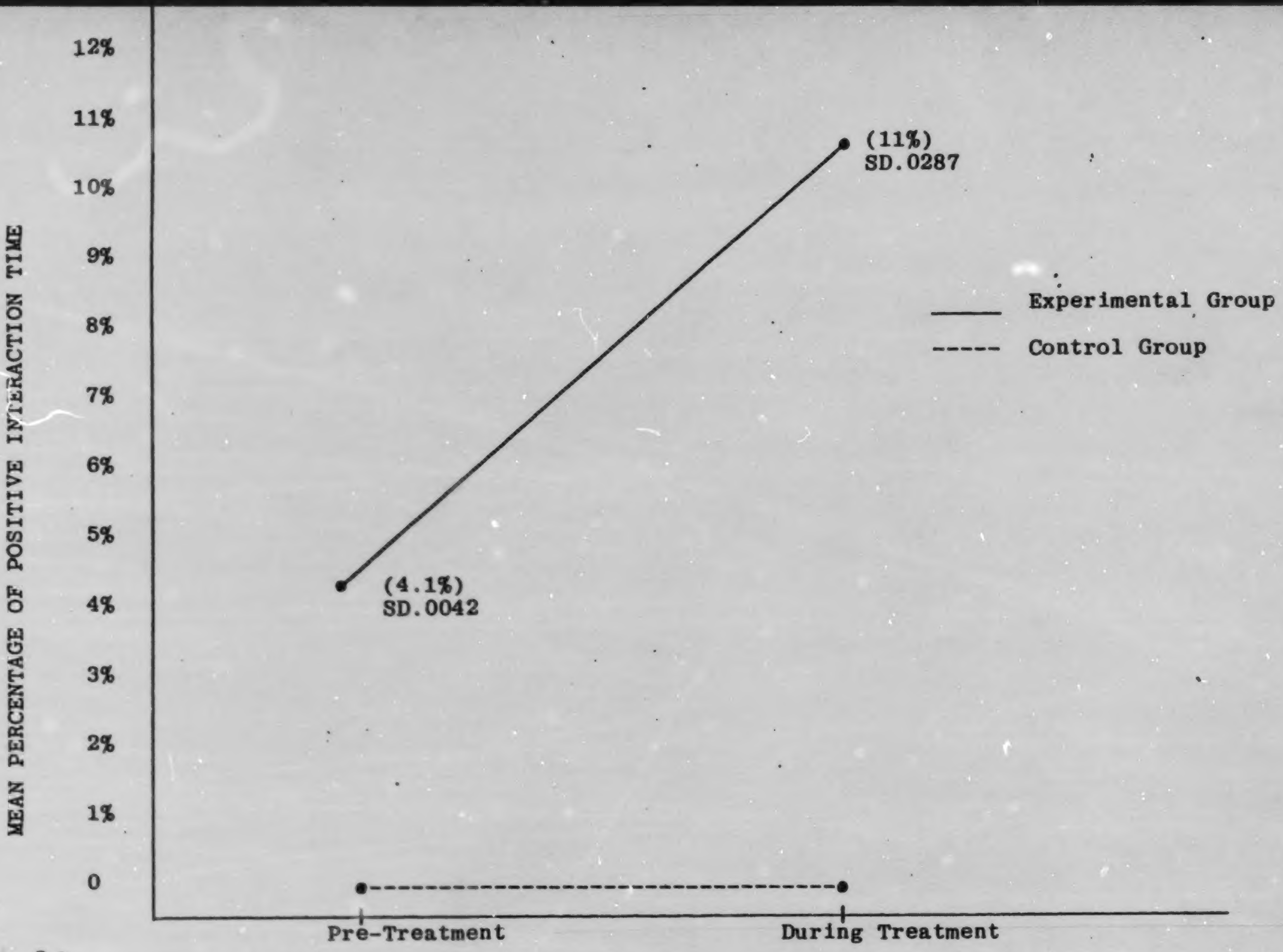


Figure 1 - Comparison of experimental and control group positive interaction means for the "pre-treatment" and "during treatment" observation periods.

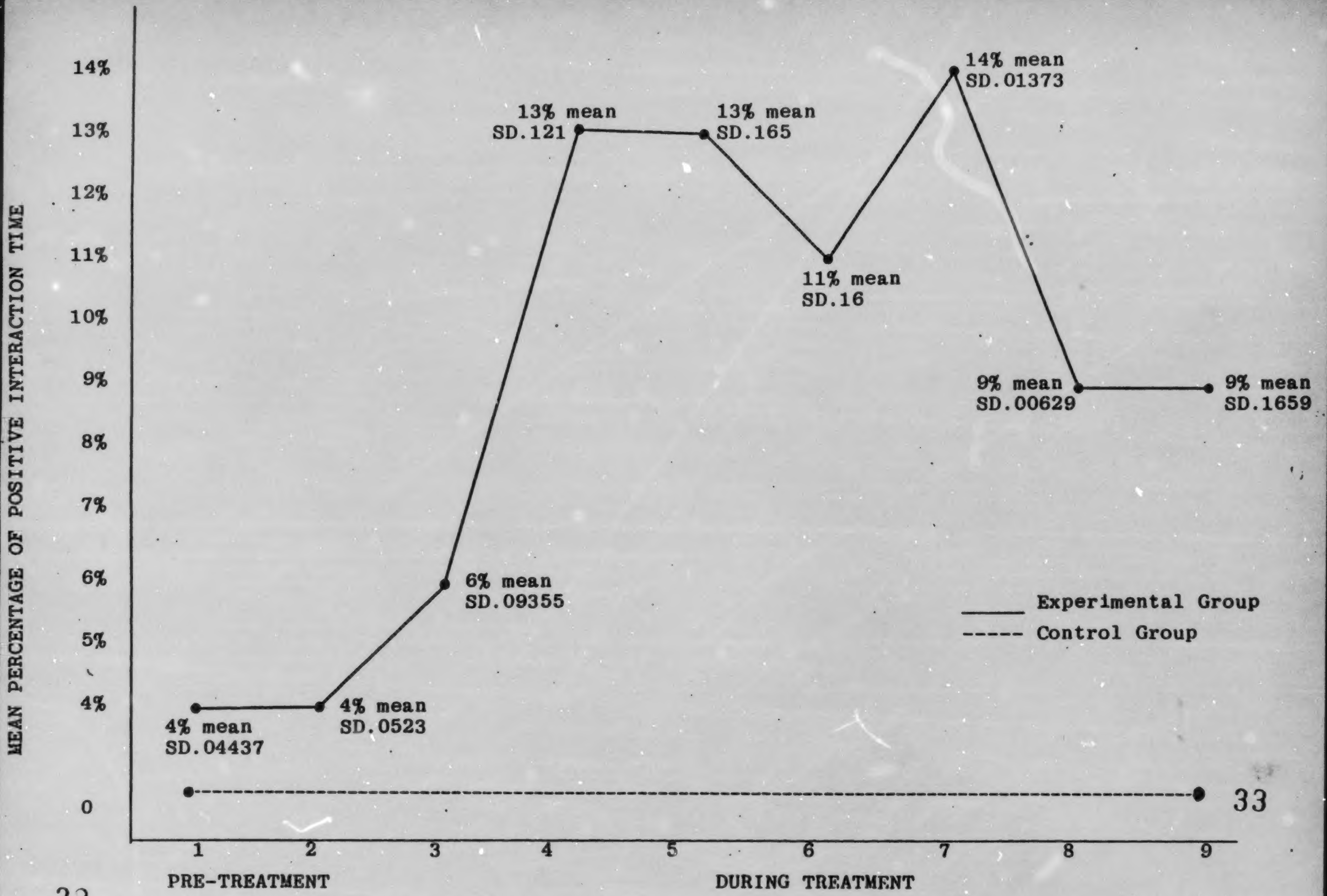


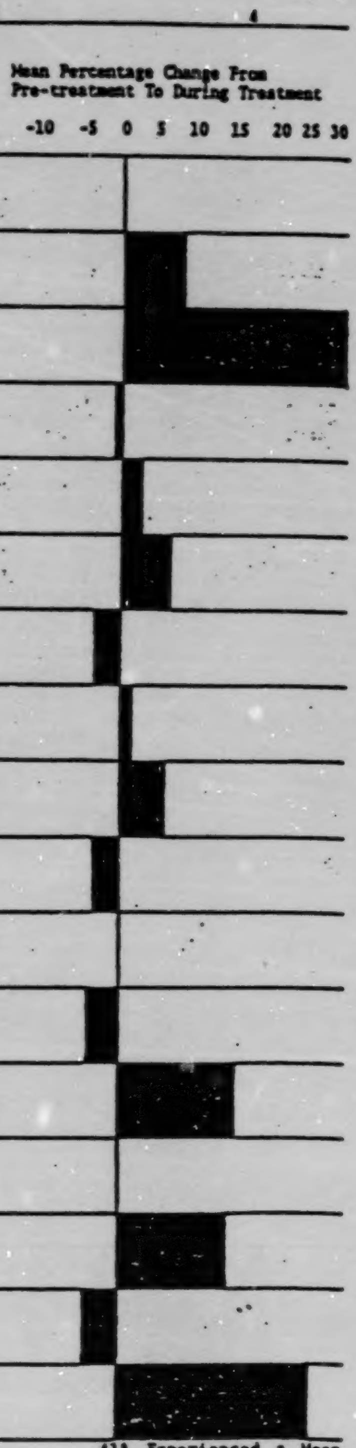
Figure 2 - Comparison of experimental and control group positive interaction means across observation series.

2 shows the variance in positive interactions across time as well as the significant difference between "pretreatment" and "during treatment" observations for the experimental group. It also shows the lack of variance and difference across time for the control group. Column 4 of Figure 3 shows the mean gains of positive interaction for each student in the experimental group demonstrating that 41% of the experimental group experienced a mean gain of at least 6% in positive interaction while 58% of the experimental group experimental group experienced negligible change, gain or loss. In calculating, any individual whose percentage of change fell between -5 to +5 was considered negligible. No significant difference in negative interaction is indicated between "pretreatment" and "during treatment". (T = .91, P = .374, df=16). It was also found that 19% of the positive interactions experienced by the handicapped tutors were with tutees in the program. Column 1 and Column 4 show further that 13% of the gains were experienced by severely intellectually handicapped while 87% were experience by students classified as intellectually handicapped.

In order to clarify the nature of this data, excerpts are given below. These excerpts typify the positive interactions in which a significant increase was indicated.

SOCIAL INTERACTION

COLUMN	1	2	3
Student		Pre-Treatment	During-Treatment
CRAIG	Intellectually handicapped	3%	3%
MIA	Intellectually handicapped	4%	12%
DONNA	Intellectually handicapped	[illegible]	30%
MIKE	Severely intellectually handicapped	6%	5%
BETSY	Intellectually handicapped	0%	2%
LINDA	Intellectually handicapped	9%	16%
RAY	Intellectually handicapped	4%	1%
GINA	Intellectually handicapped	6%	7%
ANDY	Multiply handicapped	12%	18%
MELODY	Severely Intellectually handicapped	5%	2%
NELLY	Intellectually handicapped	13%	13%
VINCE	Intellectually handicapped	6%	2%
TIFFINY	Intellectually handicapped	4%	19%
BRENDA	Severely Intellectually handicapped	0%	0%
PATTY	Severely Intellectually handicapped	3%	17%
DUSTY	Severely Intellectually handicapped	5%	0%
NANCY	Intellectually handicapped	2%	27%
OVERALL Gain MEAN		4%	11%



41% Experienced a Mean of at least 6%

Figure 3. "Pretreatment," "During treatment," and changes in percentage of interaction for each handicapped tutor.

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12:21 Brenda sits on a bar on the jungle gym. A girl sits across from her and talks to her. The girl moves a little closer to Brenda and swings on an overhead bar. She continues to talk to Brenda as she swings. She asks Brenda if those are new shoes. Brenda looks at her shoes and smiles. They talk. Another girl joins these two and listens as Brenda and the first girl continue their conversation. The second girl seems to notice Brenda's shoes and compliments Brenda. I can't tell what they continue to talk about but it seems very pleasant. (Positive, 10 minutes)

12:31 Brenda and Nelly continue to be pushed on the swings by their tutees. At the baseball diamond Andy is up to bat. One boy is pitching, another catching and one waiting to bat. Andy swings.

The pitcher calls, "strike."

The catcher says, "No Way! Give him another chance. That's no strike." Andy gets another try. "Strike
Andy gets another try.

"Strike again!" says the pitcher.

The catcher replies, "No way. That's a walk...okay, Andy, it's okay. Go ahead and go to first." The pitcher seems to agree now. The atmosphere is friendly. Two more boys join in the game. One goes to first base. The other is waiting to bat. It's a pitch and a hit. Andy runs it in. The next boy is up at bat, hits it and goes to first. Andy's turn to bat again. there are six kids playing now; two of them tutees. Andy hits a ball and runs to first. The recess bell rings and the game instantly dissolves into a crowd of children running for the doors. (Positive, 15 minutes, Tutees)

Parental Questionnaires

Fourteen (82%) of the parents (representing fourteen families) of the 17 handicapped tutors were interviewed at the conclusion of the study. Three (18%) of the parents were unavailable to be interviewed The percentages reported here are based on the 14 parents who were interviewed. When asked if their child mentioned anything about the tutoring program 93% (13) of the parents reported their child either talking about the program or demonstrating sign language at home as shown in these excerpts:

"Brenda didn't really say much about it, but she signed at home and tried to share it with us."

"Mia said, 'It's neat to learn sign language; now I can talk to deaf kids who can't talk...and I get to be a teacher, I get to teach."

One parent (7%) reported that the only knowledge she had of the program was from the papers her child brought home. In describing their child's feelings about the tutoring program 100% of the parents reported that their child had positive or very positive feelings towards the program, while 86% (12) expressed positive or very positive personal feelings about their child's participating in the program. The other 14% (2) of the parents reported that they were unsure of the purpose and potential benefits of the program. Several parents expressed that they were "unsure" of the program at first, not understanding what its purpose was and concerned that it would detract from other more important school activities. One mother commented "At first I wondered about it, but as I began to see the benefits, I changed." One of the parents reported still having concerns about her child's involvement saying, "He's not really physically handicapped, so he really doesn't need it."

When asked if they had noticed any effects on their child's language skills due to the program 50% (7) of the parents reported an effect. These parents described improvements in creating sentences and in the child's ability to express himself/herself. In discussing her daughter, one parent described that, "Signing has helped her to express herself more clearly." The other 50% (7) of the parents reported that they had not noticed any changes in language skills.

Pertaining to self esteem, 64% (9) of the parents reported a noticable improvement. One parent explained, "Donna felt good that there was one area that the other kids could learn from her in." The remainder 36%

(5) of the parents reported that they had not noticed a change. Several of these parents noted that their child did not have a problem with self-esteem and that noting a difference would be difficult.

When asked if their child's social interaction seemed to have been affected 71% (10) of the parents reported noticing a difference. A mother explained, "Andy's interactions with his brothers and sisters is more mature. He deals with everyone better." Of the parents interviewed, 29% (4) reported that they did not notice an effect in social interaction.

Concerning the amount of conversing the child does at home, 43% (6) of the parents reported noticing an increase while 57% (8) of the parents reported that it had stayed the same. Two parents expressed that they experienced frustration when their child would sign rather than verbalize, but added that usually the signing was used as a supplement to verbalizing.

In reporting if they had done anything at home to supplement or reinforce the signing skills being learned 71% (10) of the parents reported practicing signing with their child or encouraging their handicapped child to teach the other children in the family.

When asked, 93% (13) of the parents reported that they would like to see the program continued and have their child participate. Seven percent (1) of the parents reported that she didn't feel it was a worthwhile use of school time. According to the teacher, this particular parent displayed a continuous difficulty is grasping various concepts of her child's educational experience.

Recommendations for improvements to the project were also elicited from the parents. The main suggestion for improvement was to involve the parents more, perhaps by having a meeting early in the year explaining the program. One parent suggested that the parents be taught some signs so they could work with their children. Another recommendation was to take note of motor skills and sentence structuring improvements.

Tutee Questionnaires

Fifteen of the nonhandicapped tutees were interviewed at the end of the study. Table 1 represents the percentage of various responses of the tutees when asked what they liked about learning sign language.

When asked what they disliked about the program 93% (13) of the tutees reported there was nothing they disliked. The other 7% (1) of tutees said that he was nervous the first time and that he didn't like that.

When asked what they had learned from the experience 57% of the tutees said sign language was the main focus of their learning. Forty three percent of the tutees reported that they had learned to appreciate people more; specifically, handicapped kids like those in Mrs. Beckstein's class.

In describing what they learned about mentally retarded kids, 82% of the tutees' responses were positive reporting that they learned that mentally retarded kids have feelings, that they're nice, that they were smart at some things. The other 18% responded neutrally, reporting that they were unsure about what they learned about mentally retarded kids.

When questioned how it felt realizing that a mentally retarded kid knew something more than they did, 64% of the tutees reported that they were pleasantly surprised. Eighteen percent of the tutees said they felt uncomfortable discovering that a mentally retarded kid knew more than they did while 18% of the tutees were unable to express how they felt.

Table 1

Tutee Attitudes Toward Learning Sign Language

Type of Effect	Frequency	Percent of Total Responses	Percent of Total N
Learning to Sign	8	40%	53%
Getting to Know Kids from Mrs. Beckstein's Class	7	35%	47%
Learning something new	3	15%	20%
Getting out of class	1	5%	6%
Talk to friends in class without voice	1	5%	5%
Total Response	20	100%	

When asked how they felt being helped by a mentally retarded kid in order to remember a sign, 91% of the tutees reported that they felt comfortable, while 9% (1) of the tutees was unsure how he felt.

When asked if they had ever heard Mrs. Beckstein's students called names, 92% of the tutees said they had heard them called names. Thirty-nine percent of the tutees have heard them called "retards", 33% heard them called other negative names they wouldn't repeat, and 17% heard them called "stupid". Eleven percent of the tutees said they couldn't remember or had never heard Mrs. Beckstein's students called names. Of those who had heard the mentally retard kids being made fun of, 86% said they responded to the teasers by saying, for example, "Leave them alone and get out of here.", or by responding directly to the handicapped kid saying, for example, "Don't listen."

When asked what they perceived to be the benefit for the mentally retarded kids 75% of the tutees were able to express at least one benefit for the mentally retarded students. Further, 53% of these perceived benefits related to the mentally retarded student having the opportunity to make friends and "feel up with the rest". The remainder of the perceived benefits varied greatly, but centered around the idea that it was a chance for the mentally retarded students to be disciplined enough to learn something new, well enough, to share with others.

After being questioned if they felt differently towards their tutors, 100% of the tutees reported that they felt differently and in a positive way. Remarks such as, "I used to feel sorry for them, now I just like them", "I'm friends with her now, I don't ignore her anymore." "She scared me at first, but now she doesn't bother me at all" are indicative of these responses. Other than the variety of responses as excerpted above, 54% of the tutees reported that the main difference is that they now know each other and can be friends. When the tutees were asked if they thought the tutors feelings about them had changed, 100% of the tutees said they thought the tutor's feelings had changed, and for the positive. Seventy one percent of the tutees said that the tutors like them now, whereas before they didn't seem to. One tutee remarked, "He used to probably think I was mean. Now he's friendly with me. I mean we're friends." Twenty- nine percent of the tutees responded saying that the tutors were more relaxed about being around the tutees towards the end of the study.

The tutees' last question elicited whether they would like to be in the program again sometime: 100% of the tutees said they would. "I liked learning sign language and making new friends", is representative of these responses. All of the tutees expressed that their experience had been positive.

Sign Language Test

Sign language tests were administerd to all 17 of the tutors and 15 of the tutees. Two of the tutees were unavailable for testing. The results of the sign language test indicated that the tutors' overall mean score was 78% (SD=18) while the tutees overall mean score was 66% (SD=15.16). Two other scores were calculated from the test; word score mean and sentence score mean. The tutors' word score mean was 82% (SD=12.737) while the tutees' mean for that score was 67% (SD=12.48). The tutors' sentence score mean was 71% (SD=33.04) while the tutees' mean score was 64% (SD=25).

Tutoring Skills Records

Mean percentage of the total possible scores for the entire group of 17 tutors were calculated for the five questions on the Tutors' Skills Record Form and are shown in Table 2.

In order to interpret these mean scores it should be noted that a mean score of 33% would represent consistent "poor" ratings, with a mean score of 66% representing consistent "good" ratings, and a mean score of 100% represents consistent "excellent" ratings. All of these mean scores fall in the "good" to "excellent" range.

Case Study

The following case study on Melody Jones is a synthesis of observer impressions and parental and program worker's reactions to her experience with the program.

My first recollection of Melody as an individual distinct from the 16 other eager faces vying for attention occurred the day that her father came as a guest speaker to her class. As the children formed a semi-circle with their chairs, Mrs. Beckstein, the teacher, asked Melody to introduce her father to the students. With chubby hand extended, she moved toward him and confidently grasped his hand. Eyes on the floor, but with a shy smile of pride, she led him to the front of the room, paused for a moment, then dropped his hand to take her place among the circle of students. The class listened quietly as Mr. Jones, an ears, nose and throat specialist, gave a brief explanation of the function and proper care of the ears.

Table 2

Results of the Tutoring Skills Records

Question	Percentage	Standard Deviation
How well do they demonstrate each sign?	74%	8.5
How effective is their feedback for the learner?	69%	8.1
How well do they monitor learner performance?	70%	5.7
How enjoyable is the tutoring task for the tutor?	81%	7.8
How enjoyable is the tutoring for the tutee?	70%	4.3

Melody was in the sixth grade of the Meadowbrook self-contained unit for the intellectually handicapped. A Down's Syndrome child, her curly brown hair framed a round face and large brown eyes glanced at me from behind glasses as I talked with her after the presentation. By her smile, she seemed pleased that I had noticed her, but she said little as I told her that I was happy to have met her father and that I will be seeing her again when I come to teach sign language to the class. Her eyes brightened at the words "Sign Language" and she responded by telling me that she had a Sesame Street sign language book. I asked her if she knew some signs, and she noded an affirmative "yes".

As I returned to the class on subsequent occasions to teach, I noticed that Melody was attentive and willing to learn, but that she was sometimes shy about demonstrating the signs. Academically, Mrs. Beckstein told me that Melody can decode simple words, but that she does not comprehend much of what she reads. Many of the children in the class cannot read, so most of the sign language materials include photographs along with printed words and graphic sign illustrations. Hopefully, this combination of cues can strengthen the student's understanding of the connection between the words, the signs, and the subjects to which they refer. Melody required some repetition and practice before her short fingers would form the proper configurations, but she was able to retain what she learned and over a two-month period, she mastered the alphabet, her own fingerspelled name, and various signs for familiar nouns and verbs.

During the time that Melody was learning to sign at school she said little about it to her family but she began signing a few words at home. Her mother sometimes asked her if she knew the sign for a particular word and Melody was often able to exhibit her skills. As mentioned earlier, Melody had some prior experience with sign language from learning to sign "Silent Night" the previous year. As a result of that experience, her siblings had also become interested in signing. She began to teach them signs almost everyday and became the sign language "expert" at home. Her mother felt that this had a powerful impact on her feelings about herself and noted that "she really felt good about having a skill and being the only one in the whole house who knew and could answer questions about it." Melody gained a sizeable signing vocabulary--by the end of the year she had mastered approximately 175 different signs.

Mrs. Jones admitted that in the beginning she had some concerns and questions about why sign language had been introduced in the classroom. Although Melody had a slight hearing loss, it was not severe enough to interfere with normal oral communication, and her mother wondered if the program could be of any value to her. Mrs. Jones stated that her reservations about the program diminished over time because "Melody loved sign language so much, and as I began to see the benefits, I changed . . . Signing is so much a part of her life now that she uses it a few times everday just when she talks. Sometimes she will move her hands and I will ask her what she is signing--she laughs at me because sometimes she isn't signing anything!" As one of the benefits of the program, Mrs. Jones noted a positive change in Melody's language skills: "Too often, Melody leaves out connecting words and adjectives. This past year, especially since Christmas, she has made a lot of progress. The signing seemed to reinforce her language skills because she had to think through what she was doing."

As a tutor to a nonhandicapped student, Melody quickly adapted to the role of the teacher. The aide who supervised the tutoring consistently rated Melody as "excellent" or "good" on her abilities to demonstrate signs, to give effective feedback, and to monitor the performance of the tutee. At the conclusion of the year, Melody's tutee (a fourth-grader) described the sign language program as "fun" and said that she liked "learning with the special educations how you could talk." In addition to learning sign language, the tutee responded that she had learned that the mentally retarded kids are "really nice". When asked what she thought of the students in Mrs. Beckstein's class before she became involved in the signing program compared with her present feelings, she stated, "I kind of felt sorry for them, then I started liking them." As the interviewer probed for the reason for the change in attitude, the tutee explained, "I don't know, I just like them . . . they started being nice to me. All through second grade and third grade and first grade and kindergarten I didn't like special education because I was scared of them, but I just started liking them." Perhaps the tutee learned something more valuable than sign language from her association with Melody.

Since part of the sign language project aimed at assessing the handicapped students social acceptance by their non-handicapped peers, Melody was observed in her natural school setting. Although she generally got along well with the other students in her class, she often chose to play alone at recess. She enjoyed spending this free time singing, dancing, and engaging in imaginary dialogue in an area near the swingset which she had designated as her "stage". Most of the negative interaction that occurred with students from the other classes resulted from their attempts to mimic her. The negative interaction was one way, for Melody either ignored them or was so involved in her own world that she was unaware of the teasing. None of the sign language tutees were ever involved in these incidents. As the year progressed, signed songs also became a part of her recess repertoire.

According to observer comments, Melody's social interaction at school did not increase during the year, but her ability to sign won recognition for her at church. Each child was asked to prepare a special talent that could be shared with the others on a program. Melody and her mother decided that she could show them one of the signed songs that she had learned at school. Her mother described the children's reactions in this way:

> Melody had a chance to share her signing in Primary . . . I explained about sign language and how Melody had been teaching another child in the school how to sign. She had to be the teacher and decide what to teach and when to go on. I told them that she had learned a signed song at school that she wanted to share with them. As the recording of "Bless the Beasts and the Children" started and Melody began to sign, the kids did not make a sound--they were really fascinated. Later many of them came up to us and said, "That's the best talent we've ever had on the program!" Before this time Melody was often ignored, but since the program, I've noticed a few more kids make an effort to smile at her. One girl, without any prompting from her mother, baked cookies and gave them to Melody with a note that read, "I love your talent."

Although Melody will be attending a Jr. High School next year, we asked her mother how she felt about the program and if she would like to see it continued in the school. She rated the sign language program as being "very positive" and as a recommendation, she urged us to expand the program with these comments, "I just think that the purpose of it was fantastic. I would love to see how it would work in a Jr. High--to see if the benefits would be as good."

Melody's teacher also expressed her enthusiasm for continuing the program and cites the benefits that she has seen: "Melody used to look only at the floor. She would never look directly at the other person and she could not interact with the other children effectively. She is now interacting "beautifully" and doesn't retreat to the floor as often. Overall, when the children see other children in the halls there is friendly interaction."

The worth of the signing program in Melody's life cannot be adequately captured by quantitative meaurements. The evidence of the influence that it has had in her life is best understood by examining the comments of her mother, her teacher, and a newly found friend--her sign language tutee.

Learning Disabled Students as Sign Language Tutors

Because of the unique nature of the sign language studies, each is reported separately. In this second study learning disabled students in a self-contained classroom tutored their nonhandicapped peers in sign language. The method and procedures were similar to those used in the first sign language study, but the students and setting were substantively different. The main question in this study, as with the first study dealt with social acceptance. While measures were taken of signing ability, tutee attitude toward the handicapped, and parent/teacher perception, free-play interaction between tutors and regular class peers was the primary dependent variable.

METHOD

Setting

Study 2 was also conducted in the Davis School District. For this study, 7 students attending a self-contained learning disability unit at Crestview Elementary were compared with a control group of 16 students attending a self-contained unit at Washington Elementary. Total enrollment at Crestview Elementary was 492; total enrollment at Washington was 546. The majority of handicapped students in both schools were bussed from surrounding areas. The population from which the students came was previously described in Study 1.

The classroom environments differed in several respects from those in the first study. The rectangular room where the Crestview treatment group met for class seemed too large and vacant for the teacher, the aide, and the seven students. Spacious windows on the outer wall overlooked a nearby street and parking lot. Inside the room, student desks were arranged in rows facing the opposite wall where the doorway and one of the large black boards were located. Discipline was strictly enforced; students who created a disturbance, who did not complete their homework from the previous night, or who failed to finish the morning's assignment, were not allowed out for recess. The students worked individually on math and reading during the morning hours; the afternoon was spent in group learning activities. The number of students gradually increased through the year as students who fell behind in other schools were transferred into the unit.

The Washington Elementary school building was T-shaped with the lower grade classroom wing perpendicular to the upper grade wings. Near the end of the upper grade wing was Mrs. Ford's class for learning disabled children in the fifth and sixth grades. The room was quite large, twice the size of a regular classroom, with a space for the traditional arrangement of desks, 4 rows of 6 desks across, an area with table and chairs for learning groups to meet, and an open area for playing games or viewing films. The room had been carefully decorated with proportional ''white space'' between each of the student art projects that hung on the wall. The wall opposite the door and parallel with the student desks was colored with a bright bulletin board that was changed on a monthly basis or with the seasonal holidays. Facing the students' desks and near the door was a large blackboard in front of which Mrs. Ford and her full-time aide had their desks aligned perpendicular to the students' desks. One student's desk was forced up against Mrs. Ford's desk. There was only one small, three-foot wide window in the corner of the room, but the lighting and coloring of the place compensated comfortably for the minimal daylight.

The schedule for the classroom was rigid and ordered although special times of the day were designated for free time which the students controlled themselves within certain limits set by Mrs. Ford. The students seemed to think that their environment was ''strict'', judging from their reaction to Mrs. Ford and their comments to each other. However, Mrs. Ford was accommodating to each student's needs and took time to understand each student's disability.

Students

The 7 students in the treatment group at Crestview were between the ages of 10 and 12. In the year prior to the study, these students had been involved in resource programs at their regular schools, but because of inadequate academic achievement, they had been transferred to the newly established learning disability unit. Although their I.Q. scores were within the normal range, the majority of these students read on a second or third grade level. Three additional students joined the class after the study had already begun. They were also involved in the sign language tutoring but were not included as part of the study. The control group consisted of 13 fifth and sixth-grade learning disability students at Washington Elementary. Seven nonhandicapped fifth-graders from Crestview were selected to serve as tutees.

Materials

Two copies of a sign language packet were prepared for each of the 7 students. The sign packets consisted of stapled sets of pages containing the words to be signed and graphic illustrations showing how the signs were to be made. The vocabulary included the alphabet, the colors, numbers, and a variety of other simple words. In addition to single words, combinations of previous signs and new signs were formed into sentences and printed on several pages. Four sets of these packets were attached by rings to cardboard stands to be placed on the tables and used during the tutoring sessions. A game similar to Bingo was also developed which required students to draw one card from a stack, make the correct sign corresponding to the one shown on the card, then to find and cover with small paper squares the same word and illustration included on the larger board cards.

Instruments

Free - Play Interaction Form. Free-play observational data between the handicapped and the nonhandicapped students were collected by observers during morning and lunch recesses. These observations included the date, the names of the students, the type of interaction students were involved in, the amount of time in each interaction, and a judgement about the positive or negative nature of each interaction. A list of students who were held in detention each recess period was also kept. (see Appendix B).

Parent Phone Interview Guide. For a complete description of the Parent Phone Interview Guide refer to Study 1 and Appendix C.

Tutee Interview Guide. For a complete description of the Tutee Interview Guide refer to Study 1 and Appendix D.

Non-Tutee Interviews. In order to assess the attitudes of students not involved in the sign language program, interviewers modified the interview questions given to the tutees and presented them to two groups of three fifth-grade students in Crestview Elementary who had not received tutoring.

Sign Langauge Test. A complete list of vocabulary words, letters, and sentences was compiled as an instrument for conducting a test (see Appendix H, Crestview Sign Language Test).

Procedures

Selecting the students. All of the original students in each of the learning disability classes participated in the study. The nonhandicapped students who served as tutees were selected by their classroom teachers on the basis of academic achievement that would allow them to be absent from the regular classroom for short periods.

Parental Consent Forms were obtained for each of the participants as described in Study 1 or Appendix G.

Training the tutors. The training of the tutors began the second half of the year and two months prior to tutoring. During the first three weeks, the entire group of students were taught three times per week in 30-minute sessions. The instructor would demonstrate the sign, ask the students to copy the hand positions and finger configurations, and monitor the correctness of their signs. Later, she would ask them to demonstrate the signs from memory without any prompting. Two sign language packets were given to each student allowing one to be taken home and the other to be left at school. The packets followed the sequence in which the signs were taught; the alphabet, the colors, family members, numbers, and other simple words were taught sequentially.

After the initial three weeks, the sign language instructor continued to work several times each week with the students on an individual basis or in small groups of two or three. In these 20-minute sessions, conducted at a table located on one end of the room, the students were encouraged to monitor their peers and to help one another when necessary. They were also prompted to give feedback and praise to each other.

A variety of methods were used to teach additional signs. On several occasions, the instructor would teach a series of new signs to one student. After that student learned the signs properly, a second student would come back to the table to be taught by the first. The students continued to rotate teaching until all of the class members had learned the new signs.

In another review strategy, the sign language teacher would hold up a printed word, seen only by the student, and ask him or her to sign the word. As the student signed the word the instructor would verbally guess the word that the student signed. If the student could not read the word, or did not remember the sign, the student would make the sign for "picture" and the instructor would uncover the graphic illustration that showed how to make the sign. The student would then make a second attempt to sign the word correctly so that the instructor could name it. If the student was still unable to sign the word, which rarely happened, the instructor would demonstrate the sign. This approach emphasized reading as well as sign memorization skills.

Tutoring sessions. Three times each week over a seven-week period, each of the learning disability students was paired with a non-handicapped student for 15-minute tutoring sessions. Alternating between two rooms which were not being used on specific mornings, four sets of students worked together from 9:45 to 10:00 and the remaining sets worked together from 10:00 to 10:15. Although each tutor was primarily assigned one tutee, some changes were made due to student absences or to allow the tutees an opportunity to get to know more of the tutors.

Each tutor taught using a sign language packet mounted on a cardboard stand. This allowed the tutors to proceed through the words in the same order that they had learned them. The tutees could not see the printed pages in the packet; therefore, they had to depend on their tutor for all information and feedback. The aide, who in this circumstance was the sign language teacher, gave minimal direction to the tutors. She answered an occasional question, reminded the tutors to review with their tutees, and prompted them to give feedback. For the most part, the tutors were allowed to teach independently and to proceed at their own pace. During the final month of the program the students also played a form of signed Bingo together approximately once each week.

Free-play observations. It was necessary for the observer to be acquainted with the tutors in order to identify them on the playground. Therefore, the sign language instructor and teacher's aide from another classroom were trained as free-play observers. These two observers alternately monitored the students during their free play time. Both observers also noted which students were kept in detention instead of being allowed out for recess.

Observations were also conducted at the control school in the same manner by one of the observers mentioned in Study 1. In addition, the teacher for the handicapped students contributed observations of her students' interaction with other students in the school. As explained in Study 1, fewer observations were made at the control school because no interaction was occurring. Therefore 3 "pretreatment" and 4 "during treatment" observation were made at the control school while 5 "pretreatment" and 30 "during treatment" observations were conducted at the experimental school.

Parent interviews. For a complete description of parent interviews refer to Study 1.

Tutee interviews. For a complete description of tutee interviews refer to Study 1.

Non-tutee interviews. At the conclusion of the study 6 non-tutees from the experimental school were interviewed by two individuals not familiar with the students. These interviews were conducted in private areas away from the classrooms and involved the same type of questions regarding attitudes toward handicapped students that were included in the Tutee Interview Guide. These interviews lasted approximately 20 minutes.

Sign language testing. At the conclusion of the year, sign language tests were administered as explained in Study 1 except that there were no photographs for the students to work from. The vocabulary also differed slightly.

In order to avoid scheduling conflicts with the regular classroom teachers, the tutees were administered a shortened form of the test which included only 142 vocabulary words.

Data Analysis

Free-play observations. Free play interaction data were analyzed by grouping the observations into series of fives. This allowed changes in interaction occurring in the "pre" and "during" treatment periods to be monitored. At Crestview Elementary 5 "pre" and 30 "during" observations were made.

The following information was calculated from each series of five observations:

1. Total number of positive and negative incidents per student and for the total of 7 students.
2. Total number of minutes of positive and negative interaction per student and for the total of 7 students.

3. Percentage of the total observation time that each child was interacting positively.

4. Percentage of the total observation time that each child was interacting negatively.

5. Percentage of total observation time that positive interaction occurred in the group of 7 students.

6. Percentage of total observation time that negative interaction occurred in the group of 7 students.

7. Percentage of total observation time that each child spent in detention.

After collecting this information, mean scores reflecting the above information were calculated for the "pre" and "during" observation periods. Using the "pre" and "during" mean percentages of positive interaction, two paired t-tests were used on the data to check for statistically significant differences.

Parental and tutee data analysis. For a complete description of parental and tutee data analysis refer to Study 1.

Non-tutee interview data analysis. Non-tutee interview data analysis was conducted in the same manner as the tutee interview data analysis described in Study 1.

RESULTS

Free-Play Observation

Free-play time prior to and during the treatment is summarized in Figure 4. The horizontal axis represents the two points for "pre" and "during" periods; the vertical axis represents the group mean percentage of positive interaction. Results of the t-test indicate that the experimental group mean percentage "during" treatment was significantly higher than the "pre" treatment at the .05 level (t=2.74, p,.025, df=6).

Figure 5 further clarifies the mean percentage of positive interaction across time for both the experimental and control groups. The horizontal axis, labeled 1 through 7, stands for the series of observation sets described in the procedures section. The first set shows the "pre" observation period, while the remaining sets show the "during" observation period. The vertical axis represents the mean percentage of interaction across time as well as the significant difference between "pre" treatment and "during" treatment observations for the experimental group. The control group percentages are also shown by the dotted line. Figure 6 describes the mean gains in positive interaction with non-handicapped peers experienced by each student in the experimental group contrasted with the mean percentage of time that each student spent recess in detention. Since each student had a "pretreatment" interaction mean of 0%, the bars describing social interaction represent mean increases occurring in the "during treatment" period. These increases are often

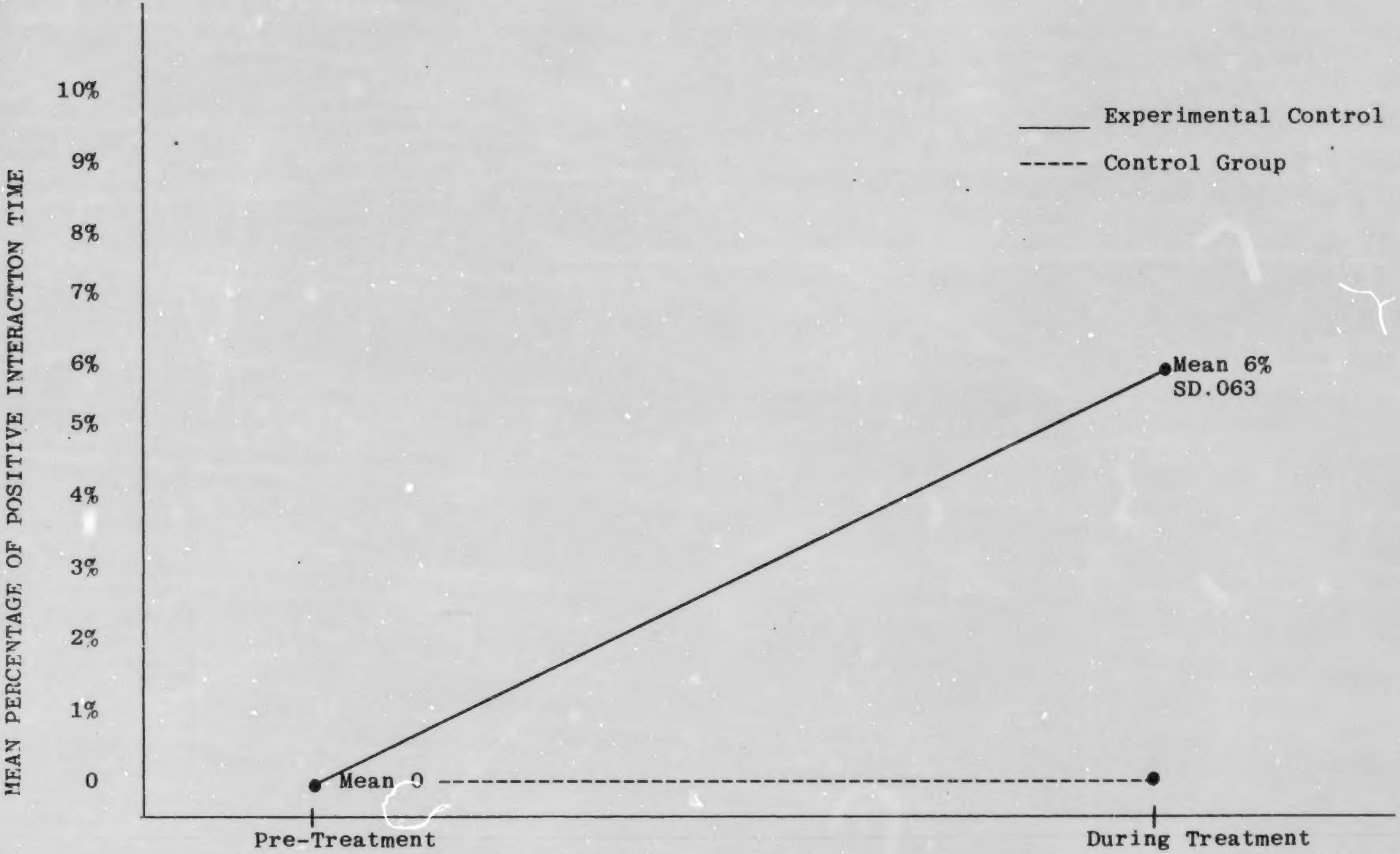

Figure 4 - Comparison of experimental and control group positive interaction means for the "pre-treatment" and "during treatment" observation periods.

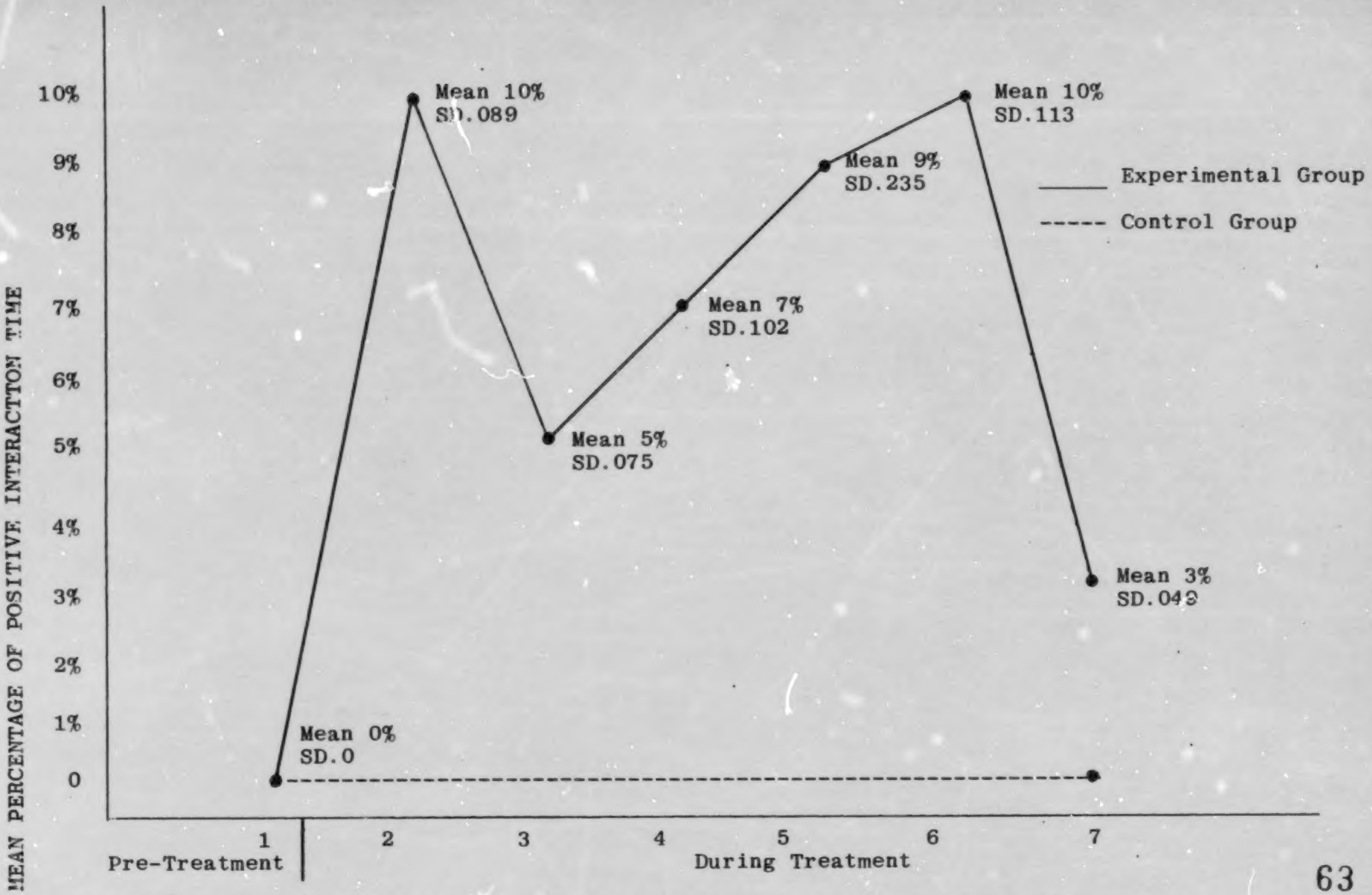

Figure 5 - Comparison of experimental & control group positive interaction means across observation series.

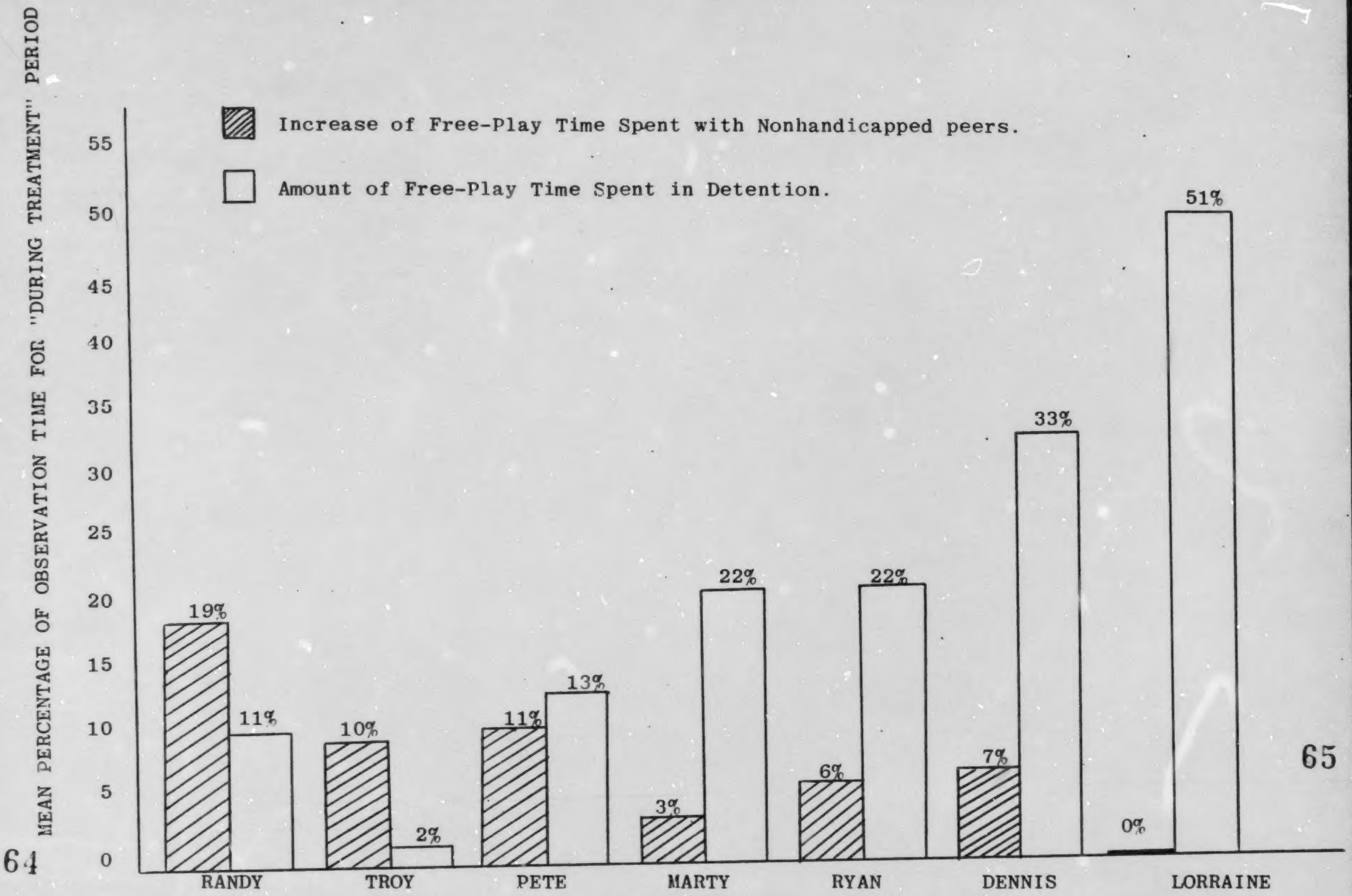

Figure 6 - Mean percentage of observation time each student spent interacting or in detention for "during treatment" period.

inversely related to the mean amount of free-play time that each student spent in detention. The only student to experience no interaction gain was not allowed out for recess approximately half of the time. As a group, 57% (4) of the students were held in detention for over 20% of their free-play time.

Parental Interviews

A total of 6 (86%) of the parents of the 7 handicapped tutors were interviewed at the conclusion of the study. The percentages here are based on the 6 parents who were interviewed.

When asked if their child mentioned anything about the tutoring program at home, 100% of the parents stated that their child had mentioned the signing program in favorable terms and 100% choose "very positive" or "positive" as the term that best described their child's feelings about the program. Also, 100% of the parent chose "very positive" to describe their own feelings about their child's involvement in the program.

From the three-part question asking parents if the sign language program had an effect on their child's language skills, self-esteem, or social interaction, the following responses were given: 0% felt that their child's language skills had been influenced; 100% felt that their child's self-esteem had been influenced positively; and 83% (5) felt that their child's social interaction had been positively influenced. Some specific examples cited by parents concerning how the sign language tutoring program had affected their child are given below:

> He often signed things like "I love you" and he showed his sisters how to sign it. As the youngest child he sometimes gets put down and signing was something he could do that his sisters couldn't. I think that he realizes "I can do something on my own." He can even sign some of the things that he sees on TV.

> I think that he felt that he did well at that. He was excited about learning something that he could do well. He talked a little about being special or different because of that. The only other time he has mentioned something like that was in third grade--and that was because he was the littlest--not a very positive thing. I think that he is a little more confident about himself now. He has initiated more conversations and talks a lot about sign language.
>
> When he is given an opportunity to teach others it makes him more positive towards himself. I don't know abut the social interaction, there are not many kids on the street his age.
>
> I think that it helped him to feel like he was on top of something. It was difficult for him going into a special class this year and I think that it helped him to know something and to be able to teach it. He also felt more at ease around his aunt and uncle, who are deaf, because he could communicate with them.
>
> It made things a little better for her. She's more thoughtful of others now. If she finds someone who has a problem she doesn't want to leave them out. If someone can't hear she tries to involve them in a conversation.

Because of possible concerns that parents might have about whether sign language would in any way be detrimental to their children's expressive verbal skills, the parents were asked if the amount of conversing tha their child did at home increased, decreased or stayed the same: 33% (2) said that the amount of conversing had increased; 67% (4) said that the amount of conversing had stayed the same.

Although the parents had not been asked to reinforce or supplement the program at home, 100% of them spontaneously provided some support by allowing their child to demonstrate signs or to teach signs to family members. Examples of parental responses are listed here:

> At least every couple of days he would sit down and try to teach us something. He'd also teach his little sisters. It was cute. He would sit down and explain it to them, then show them the signs. He also used it with Lydia and Leo (deaf aunt and uncle) whenever they were around. He was the only one in the family that could really talk to them that way.
>
> We had him show us what he learned. I noticed that he learned more on some days than others and I asked him if he had it every day--he said "No". Anyway, on the days that he had it he would show us new words.

> He spots all kinds of things connected with sign language and shows them to us.

In conclusion, 100% of the parents wanted to see the program continued and would want their child to participate in it again. When asked for additional comments about the program, several of the parents made these remarks:

> When Dennis brought home the paper for me to sign he didn't say much. But he was really happy when I signed the paper. I guess maybe he didn't think that I'd let him be in it. His older brother was also in resource and later had a chance to teach others in math. That gave him a boost--he didn't feel like a dummy if he could teach someone else. I think this is the same.

> Maybe we have a special interest in this because of having relatives who are deaf and knowing a few others who are deaf. The common barriers can be broken down by knowing sign language and how to communicate. It makes our kids understand them so that they don't treat the deaf as different. I really liked the program.

> I'm a professional clown so I work around a lot of different people. I have also done substitute teaching and one time I taught at a handicapped school. I think that it is important to edify ouselves by learning and teaching. It was good for Pete to not always have to ask Mom or his sisters. It was a chance for him to know more and develop a feeling of self-worth. Anything that a person can learn adds to that. We used to live in California and sometimes we would see the deaf there. I really hope that other parents understood the program and that you keep it next year. It is a fantastic, superb, program.

Tutee and Non-Tutee Interviews

All 7 of the nonhandicapped tutees were interviewed at the end of the study. In addition, 6 non-tutees were asked similar question relating to the sign language tutoring program and attitudes toward the learning disabled students.

When asked to describe their feelings about the program, 100% of the tutees stated that they liked being in the sign language tutoring program. The two most commonly given reasons for why they liked it were: 1) because it was fun to learn sign language; and 2) because they were able to make new friends. Of the non-tutees, 100% reported that they had heard positive comments from students who had participated as tutees. One non-tutee said, "It's fun, they brag about it. They have taught some of us a few signs." None of the tutees stated that they disliked anything about the program; none of the non-tutees said that they had heard anything negative about the program from participants.

In describing general student attitudes toward the learning disabled students, 71% (5) of the tutees admitted that they had heard the students from Mrs. Blandsbury's class called names and felt that the other students in the school felt negatively towards them. A sample of their responses are recorded here:

> Some people call them dumb.
>
> They just think they are really dumb and everything...some of the kids think they are smarter.
>
> Mean kids call them "retards" and stuff.
>
> They see them as different because they don't know them.
>
> They were called things...some were "stupid" and "dummy" and I won't tell the rest because they are dirty.

The remaining 29% (2) said that they had not heard the learning disabled students called any names. Of the non-tutees, 33% (2) remembered having heard other students make fun of the learning disabled students, while 67% (4) had not. When asked in what ways the learning disabled students were similar to or different from the other students in the school, 100% of the tutees and non-tutees felt that they were similar in their personalities, their likes and dislikes, and their family backgrounds.

On questions relating to how they personally felt about the learning disabled students and whether they felt differently now than before, the tutees answered:

> They are slow learners.
>
> They are handicapped...I haven't really thought about it.
>
> The are not retards. They are a lot nicer than some other kids... They're normal people.
>
> Well, we used to think that they were weird and stuff. It took the first week, it was kind of uneasy, and then the second week we all got along.
>
> I learned to respect the mentally retarded. I was surprised about what fun it was. I thought it was going to be bad.

Most of the non-tutees were reluctant to express how they felt on the subject. One of the non-tutees said the the learning disabled students acted "weird", but the others preferred not to comment or simply said that they didn't know them very well.

The tutees were then asked how they felt when they heard other students calling the learning disabled students names and what they would do if they heard that happen. All of them replied that "it would feel pretty bad" or that they would "feel sorry for them." Other comments included:

> A pretty bad feeling. I didn't feel as bad as I do now...because I know them more.
>
> I don't know.
>
> I would tell them that they weren't retards and that they were really nice and they are nicer than other people. They are.

In a particularly candid statement, one of the tutees said:

> I learned not to be mean to them...and like if I used to bug her (Lorraine), which I did, I didn't know...We would bug her, you know, because...if she accidentally bumped into me, I'd say "knock it off" or something.

The non-tutees also expressed that they felt "bad" when they heard the learning disabled students called names. One of the non-tutees expressed his belief that the students who did participate in the tutoring felt differently than those who did not have the opportunity. A portion of his remarks are included in the following excerpt:

Int: Do you think the kids who learned signing feel differently about the kids in Mrs. Blandsbury's class now?

Boy: Yes. They like 'em more. They're friends.

Int: What about you. Do you feel differently towards these kids from the beginning of the year?

Boy: Well, yeh. I like them more. I know 'em a little better.

Int: Do you think you'd feel differently than you do if you could have been in the sign language program?

Boy: Yes.
At the beginning of the year I didn't care and feel sorry for them sometimes. But I don't really feel like I'm friends with them.

Int: Why not?

Boy: There's just no chance to get to know them.

If I could be in a place where I could get to know them I would like them more and be better friends. As it is, I can't be very good friends.

(Pause...) Yeh, and I think if I were friends I'd probably feel real bad when I heard Randy made fun of..
Maybe...

(Pause...)

Int: Maybe...What?

Boy: Well, I don't know. Maybe then I might not care if anybody made fun of me if I stood up for him.

All of the tutees and the non-tutees agreed that the opportunity to tutor had been a good experience for the learning disabled students because it had given them a chance to "make new friends" and to "feel good" about being able to teach something. The tutees agreed unanimously that their tutors had improved as the program continued and felt that their tutors had done a good job of teaching sign language.

In general, 100% of the tutees said that they would like to be involved in the tutoring program again; 100% of the non-tutees also said that they would like to have an opportunity to participate in the future.

Sign Language Test

Sign language tests including vocabulary words (215 points) and simple sentences (107 points) were administered to the 7 tutors which allowed a maximum possible score of 322 points. Results indicate that the tutors' mean word score was 70% (SD=10) of the possible score; the mean sentence score was 77% (SD=35) of the possible score; and the mean score for total points possible was 73% (SD=18). Because of time limitations, the tutees were given a modified sign language test which included only vocabulary totaling 142 points. The tutees mean score for vocabulary was 74% (SD=20) of the total.

Case Study

Randy's placement in the self-contained learning disability unit at Crestview Elementary came prior to Christmas and after a long series of transfers between other schools. Because of family moves, Randy had attended three different elementary schools by the time he began the fourth grade. His resource teacher from the previous school suggested that he be placed in the third grade again, rather than the fourth, because of his academic deficiencies. The school followed that recommendation for two weeks, then returned him to the fourth grade because his large physical size made it difficult for him to be accepted by the other third-grade students.

At this point, his teachers began noting behavioral problems that they felt interfered with his learning. His behavior was monitored by the resource team, and the following year he was sent to a behaviorally handicapped unit. On Burke's Behavior Rating Scale, Randy was rated by his father and his resource teacher as being significantly low in academics, intellect, and attention. After attending the behaviorally handicapped class for several months, however, his teacher there felt that his problems were not severe enough to warrant that classification and it was decided that he would once again be transferred, this time to the learning disability program.

Shortly thereafter I met Randy and the six other students in Mrs. Blandsbury's class. Although Randy was only 10 years old, and several of the other students were 11 or 12 years of age, he was noticeably larger and heavier than the other students. After the initial sign language lesson, I stayed to work with a few of the students on their other academic assignments. On a conversational level Randy was very bright and loved to talk. He could describe in detail, and with great enthusiasm, the movie that he saw on T.V. the previous night or a joke that he recently heard, but as I helped him through his first-grade-level reading book, his progress was slow and painstaking. As each letter was sounded out, each word mouthed, and each sentence pieced together, I was amazed at the tenacity that he exhibited for such an arduous task.

Randy's signing skills developed rapidly. I also noticed that his reading improved when he signed words and sentences to me instead of focusing on reading them aloud. The most difficult part for him was fingerspelling because he could not visualize the correct letter order without actually seeing the word in print. During one visit I worked with the students individually and I noticed that Randy looked unhappy after struggling unsuccessfully with some math problems involving division. I asked him if he was frustrated with math and he said "Yes", so I showed him the sign for "frustrated". I asked him a few other questions about what he liked and he replied that he "didn't know". I then showed him the signs for "know" and "don't know". After that, his mood improved and we continued signing a conversation about his dogs. I observed on later occasions that his moods could fluctuate rapidly over a short period of time.

Randy seemed to particularly enjoy the opportunity to tutor another student, and with his sense of humor, his tutees seemed to enjoy him. In an interview with one tutee, a fifth-grader, the interviewer asked what other kids in the school thought of the students in Mrs. Blandsbury's room. With some hesitation. He repied, "Um...some people call them dumb." In stating his own opinion, however, the tutee asserted, "Well they're not dumb...she (the sign language intructor) was having us sing a song in sign language and I went in there and I didn't even know it. These kids were sitting there already doing it". The tutee also admitted that he had heard negative labels applied to many of the students and that he had specifically heard Randy called "Chubs". As the interviewer questioned the tutee on what he would do if he heard Randy being called names now, the tutee answered that he would say, "I'd just bet anything that he's smarter than you." The tutee sensed that the benefits of the signing program went beyond just learning to sign. When asked if he thought that the opportunity to tutor had been good for Randy, the tutor replied that it had because "He started liking me." Randy's social interaction did increase dramatically during the period of tutoring: During observations made before the tutoring began, Randy did not interact at all with his nonhandicapped schoolmates; during recess observations made during the tutoring period. 19% of his free play time was spent interacting with nonhandicapped students. Randy became a regular participant in baseball games played with students from other classes.

Parental support for the program also reflected the positive impact that signing and tutoring had on Randy's life. His mother noticed that Randy was always excited about learning sign language and said, "It's the one thing that he would come home from school and practice on without being reminded. He was always signing something and saying "'Look, Mom, do you know what this means?'" She expressed her surprise over how readily Randy was able to develop signing skills:

> I was really impressed by the program. I was impressed that he could learn it so easily when he's never been able to pick up most things in school. It made me feel better to realize that he is not lacking in knowledge--that although he has specific disabilities, he is generally intelligent.
>
> Although Randy has problems in reading and in math, he was able to look at the sign language visuals and do it. I didn't know that he was tutoring other students before, but I think it was good for him to do that--to know that he could help someone else. He gets tired of being the one that doesn't know things. With this, he could help himself and others to learn. It was something that he could excel at. I would be interested in finding out if there are possibilities for him to pursue this either for a profession or just so that he could volunteer and help others.
>
> Randy liked Crestview Elementary quite well. Most years he really slows down in school from January to May. This year he went up one-and-a-half years in math. The only negative comments he made about school were that his teacher didn't like him. She gave him too

> much to do. Most years he complains about people picking on him. But he didn't in this school. Being involved with your program may have helped.

Randy's successful social integration into the new school setting was not matched by all of his classmates. The ways in which his involvement in the sign language program contributed to that acceptance by nonhandicapped peers can only be inferred from the information presented here.

Anecdotal

The social worker, who had not been informed about the program previously, noticed improvements in the students' self-esteem that she attributed to the program:

> Shortly after we began the signing program some of the students began signing some words while she was involved in various activities with the group. She asked them what they were doing and they proudly respond that they knew sign language. They stopped what they were doing that day and she allowed the students to show her a few signs and how to spell her name. Lorraine was particularly proud of her new skills and announced: "We can sign, you know. We'll teach you, but it's hard!" Mrs. Powers said that that was the first positive comment that she had ever heard Lorraine make about herself. She also mentioned that each of the students portrayed an enthusiasm for signing. Even Ray, who generally refused to interact wtih activities in the group, became animated when talking about signing.
>
> On subsequent days the students asked her if she remembered how to sign her name. They often took the last few minutes of time together to have the students show her more signs. She believes that the program has been excellent for the students' self-esteem and emphasized the pride that the students showed in their signing abilities. Another specific incident she related occured while she and Randy were walking down the hall together. Randy made her stop in front of a bulletin board that the students put up using hand configurations from the manual alphabet to spell "Have a safe and happy summer". Randy asked her if she could read it and helped her when she read part of it incorrectly. Later Lorraine did the same thing.

Mrs. Bowers is enthusiastic about the signing program and the positive influence that it has had on the students. She would like to see the program repeated and expanded.

Experiment 2:

Handicapped Students Tutoring Younger Nonhandicapped Students in Reading

There are three general purposes for this study in addressing the previously described research problems:

1. To systematically examine the effects on both academic achievement and self-esteem when handicapped students tutor non-handicapped students.

2. To carefully and systematically examine the academic effects on the non-handicapped students who are tutored by handicapped tutors.

3. To more fully understand the attitudes and perceptions of parents and teachers concerning reverse-role tutoring program.

Research Hypotheses and Questions

To meet the previously described general purposes of the study, three specific research hypotheses will be tested:

1. Reverse-role tutoring will significantly improve the reading achievement of handicapped students, as measured by standardized and criterion reading achievement tests.

2. Reverse-role tutoring will significantly enhance the general and academic self-esteem of handicapped studnet, as measured by standardized self-concept instruments.

3. Reverse-role tutoring will significantly improve as measured by standardized and criterion reading tests.

This study will also address two specific research questions:

1. What are parents' perceptions and attitudes about their handicapped child's participation in the reverse-role tutoring program?

2. What are the attitudes of teachers of the handicapped tutors and non-handicapped tutees concerning the strengths and relative effectiveness of the reverse-role tutoring program.

METHODS

Subjects

Students selected for participation in this study came from Utah's third largest school district, Davis County School District. The district is comprised primarily of suburban schools. Four elementary schools were selected for participation in the study because they contained the special education classes and students needed for the study and also because the four schools represented a cross-section of special education students in the state. A total of 78 special education students were involved in this study -- 39 students each in the treatment and control groups. The handicapped students in this study came from three types of special education classes -- self-contained behaviorally handicapped (BH), self-contained learning disabled (LD), and resource students.

Twenty-four BH students from two self-contained classes (12 students in each class) participated in the study. These students were assigned to a self-contained behaviorally handicapped class on the basis of anecdotal records of teachers and administrators that indicate serious discipline, behavioral, and/or emotional problems. Placements were done upon the recommendation of school special education assignment teams which were comprised of the principal, resource teacher, speech therapist, psychologist, nurse, and social worker. The recommendation for placement in a self-contained class must also be approved by the district placement committee.

BH students have typically been assigned to self-contained classes as a result of long-term, aggressive behavior and/or academic motivational problems. Of the 24 BH students in this study there were 21 boys and three girls; three fourth graders, nine fifth graders and 12 sixth graders. *Academic achievement was not a consideration in the placement* of BH students to self-contained classes. As a result, there were some diversity of age within the classes and considerable academic diversity among the students with reading achievement ranging from first to twelfth grade levels.

Also included among the 78 special education students of this study were 26 learning disabled (LD) students from two self-contained classes -- thirteen students from each class. Placement in a self-contained LD class was based on a serious learning deficiency in both achievement level and grade placement. The Davis County School District criteria for placement in a self-contained LD class required a 40% deficiency on standardized achievement tests and a 40% below-grade- level performance in at least two academic subject areas. These subject areas were (a) writing ability, (b) reading, (c) spelling, and (d) math. Placement in a self-contained LD class was similar to the placement process of BH students. The student must be recommended by the school special education team and be approved by the district placement committee. The 26 self-contained LD students in this study were comprised of six girls and 20 boys; 16 fifth graders and 10 sixth graders.

The remaining 28 special education students in this study came from the resource classes at Washington and Crestview Elementary schools. Fourteen resource students from each school were selected for participation in the study. The group of 28 resource students was comprised of 10 girls and 18 boys; eight sixth graders, 12 fifth graders, and eight fourth graders. A resource student can be classified either as learning disabled or behaviorally handicapped. Of the 28 resource students in *this study 19 were classified as LD and the other nine were identified* as BH. Resource students were assigned to regular classrooms, but were required to attend a remedial resource class for a certain period of time each day determined by the severity of the handicap. Placement in a resource setting as opposed to a self-contained class was determined by similar, yet less stringent criteria. For example a student that is 40% deficient in achievement or below grade level in only one subject could qualify for resource placement, but would not qualify for self-contained placement. Similarly, placement of a BH student to resource would indicate less severe aggressive behavior or motivational problems, although serious problems would still exist. Although the resource students had less severe learning or behavioral handicaps, they were identified as special education students and were assigned to resource for remediation upon the recommendation of the school special education team.

All of the fourth, fifth, and sixth grade resource students from Washington and Crestview elementary schools were selected for participation in this tudy. This was done to correspond the self-contained LD classes also included in the study.

Besides the 78 special education students in this study, there were also 82 first graders who participated in the research. Each of the ten first grade teachers from the three schools, where a special education treatment group was located, identified 8-10 students who were not classified as special education students, but were below grade level in reading skills.

Also included in the study as important sources of data were the ten first grade teachers, the four special education teachers, and the parents of the 39 special education tutors in the treatment group.

Research Design

Due to the constraints of self-contained classes, one BH class and one LD class were randomly assigned to the treatment group. These two classes were from J. A. Taylor Elementary and Washington Elementary schools respectively. The other two self-contained class were assigned to the control group. These were Sunset Elementary and Crestview Elementary respectively. This design was determined to be preferable to complete randomization due to the threat of contamination that would occur with random assignment of students from the same class to the different groups.

Because the 28 resource students were in regular classes and attended resource only part-time, it was more feasible to randomly assign these students to the treatment and control groups.

From the total group of 28 resource students, 14 were randomly assigned to the treatment group and the remaining 14 students were controls. Eight resource students from Crestview School and six from Washington School were assigned to be tutors.

With the inclusion of these four self-contained classes in the study, a quasi-experimental design was selected because the self-contained classes formed naturally-assembled, interest groups rather than randomly-created groups. Since all of the subjects were not assigned randomly to either the treatment or control groups, a "non-equivalent control group" design was used (Campbell and Stanley, 1966). This design utilizes a pretest and posttest for both the treatment and control groups used to control for differences between groups due to history, maturation, testing, instrumentation, and other threats to validity.

From the pool of 82 first graders selected for participation in the study, 39 were randomly assigned to be tutored by the handicapped students with the rest serving as controls. Twelve first graders were assigned to the treatment group from Taylor Elementary schools, along with 19 and eight first grade tutees from Washington and Crestview Elementary Schools respectively. These number corresponded to the number of handicapped tutors at each school.

Shortly after the study commenced, two first graders were transferred, upon parental requests, from the treatment to the control group. This resulted in the treatment group being comprised of 37 tutees with 45 first graders assigned to the control group.

Since the first-grade tutees and controls had been randomly assigned to their respective groups, a posttest only research design could have appropriately been utilized for that group. It was, however, decided to use a similar, yet slightly modified, "non-equivalent control group" design to control for any initial differences between groups and across school or socio-economic strata. By making the research designs similar for both groups of the study, consistency in data analysis was also insured.

Instruments Used

Four instruments were used with the handicapped subjects to measure the dependent variables---one standardized reading achievement test and three separate self-esteem instruments. The three different types of self-esteem tests were utilized in response to the concerns raised in the literature regarding the difficulty of measuring self-esteem.

For the first graders in this study, only one dependent variable--reading achievement, was measured. Two separate reading tests were utilized---one standardized and one criterion test.

Subtests 13, 14, and 15 of the Woodcock-Johnson Psycho-Educational Battery, Part 2: Tests of Achievement, were administered before and after the treatment as pretests and posttests respectively. Subtest 13 was used to measure the students' letter and word identification skills, subtest 14 was used as a measure of word attack skills, and subtest 15 was used to measure passage comprehension. A speciman copy of the answer booklet for this standarized reading achievement test is found in Appendix H.

The Piers-Harris Children's Self-Concept Scale Entitled, "The Way I Feel About Myself" a self-report instrument designed to measure the general self-concept of children over a wide range of grade levels administered. When administered as a group test, it requires only a third-grade reading ability. The scale is comprised of 80 statements to be marked with a "yes" or "no" answer. The student marks "yes" if the statement is like him most of the time and "no" if it is not like him. Included in the general self-concept scale of eighty items are six subscales: behavior, intellectual and school status, physical appearance, anxiety, popularity, and happiness and satisfaction. This study examined not only the total score of general self-concept, but also three of the subscales -- behavior, intellectual and school status, and happiness and satisfaction. Time required for testing is approximately twenty minutes, however, there is no time limit for this test (Piers, 1969).

A speciman copy of this instrument is found in Appendix J.

The Student's Perception of Ability Scale (SPAS) is similar to the Piers-Harris scale in its self-report format comprised of 70 statements that the child determines to be "like" or "un-like" himself. The child marks "yes" if the statement is like himself and "no" if the statement is unlike himself. This instrument was developed to measure a more specific part of the overall self-concept of elementary school children -- the academic self- concept. This academic self-esteem instrument has been utilized with success among elementary school children and has been specifically tested using special education students (Boersma and Chapman, 1978; Boersma, Chapman, and Maguire, 1979; Boersma, Chapman, and Battle, 1979).

Contained in the instrument are six subscales designed to measure different aspects of the total academic self-concept. These subscales include: academic ability, arithmetic, school satisfaction, reading and spelling, penmanship, and confidence. This study focused on the total score and three subscales believed to be most directly related to the treatment -- academic ability, school satisfaction, and reading/spelling.

A specimen copy of the Students' Perception of Ability Scale is found in Appendix C.

Each of the two previously described self-concept instruments are self-report instruments with students reporting their own perceptions of self. A different type of self-concept instrument was also selected for use in this study. The Inferred Self-Concept Scale (McDaniel, 1973) was developed with the underlying assumption that self-esteem can be inferred from behavior. This assumption seems especially important for use with handicapped students. The Inferred Self-Concept Scale consists of thirty statements about student behavior that the teacher rates on a five point rating scale. Scoring is accomplished by adding the numbers in each column to give a total inferred self-concept score. The total score can be thought of as a point on a continuum between 30 and 150, with 30 representing a socially undesirable or negative self-concept and 150 representing a socially desirable or positive self-concept. Besides the total score, this study also examined the two subscales. Subscale A, comprised of 13 items is designed to measure "Self-Conformance" or interpersonal relationships. Subscale B consists of 11 items and measures "Self-Attitude."

A speciman copy of the Inferred Self-Concept Scale is found in Appendix L.

The *Beginning Reading I* (Harrison, 1980) criterion diagnostic test was given as a pretest and the criterion posttest was administered at the conclusion of the treatment period. The *Beginning Reading I* criterion posttest consists of five parts: consonant sounds, short vowel sounds, combination sounds, blending or decoding, and sight words. The sight words section of the criterion test was not administered as part of this study. A speciman copy of the test instructions and the actual criterion *Beginning Reading I* tests is found in Appendix M.

Unlike the *Beginning Reading I* criterion tests that were used as both pretests and posttests with the first grade tutees and controls, the Woodcock-Johnson reading subtests previously described were administered to the first-graders as a posttest only.

Each of these instruments has been widely used and has demonstrated acceptable levels for reliability and validity. An in-depth summary of the available validation date for each of the three self-esteem instruments is found in Appendix N.

Instructional Materials and Tutor Training

The instructional materials and the tutor training procedures were adapted from the Beginning Reading I structured tutoring program developed by Grant Von Harrison (1980). The structured tutoring manual was originally developed to be used by parents, aides or older students. Tutor training was designed to be self-instructional with the guidance of the training manual and a supplemental training audio tape. For this particular study, the handicapped tutors could not be trained by the self- instructional manual because most of the tutors themselves were deficient in reading skills. As a result of this unique challenge, the handicapped tutors were trained collectively following the procedures for training handicapped tutors suggested by Osguthorpe (1984). The tutor training consisted of demonstrating and practicing four important tutoring skills: demonstrating the learning task, prompting the tutee as needed, monitoring tutee performance, and providing praise and corrective feedback.

Three one-hour training sessions were conducted with the handicapped tutors. The tutors were given the opportunity as part of the training sessions to practice the tutoring skills under the supervision of a paraprofessional aide who had been trained using the training manual and tape supplement. After the training sessions and several in-class practice sessions, each of the handicapped tutors underwent a mastery check of their tutoring skills. Each of the handicapped tutors demonstrated their mastery of the tutoring skills before they could actually begin tutoring a first grade tutee.

The paraprofessional aide was trained in the tutoring skills outlined in the training and instructional materials. The aide was also trained in administrative skills of record keeping and monitoring student progress; such as tutor log which recorded dates, length of tutoring sessions, lessons covered, and completing the learning gains summary sheets. The aide was also oriented to dealing with the handicapped tutors and the unique challenges associated with each type of special education tutor. The paraprofessional aide also supervised the tutoring sessions and provided on-going inservice for the tutors as needed. Such inservice included meeting with the tutors to review tutoring skills and discuss student progress and problems encountered and solutions to those challenges.

General Procedures

Written permission for participation in this study was obtained from the parents or guardians of all of the students involved in the study. Separate parental consent letters and permission forms were used for tutors, tutees, and the students in the control groups. Copies of the information letters and the parental consent forms are found in Appendix O. After parental consent was obtained, each of the groups of handicapped students were pretested with the reading and self-esteem instruments.

Those handicapped students in both the treatment and control groups who scored less than at a third grade level on the Woodcock-Johnson reading tests were also given the Beginning Reading I diagnostic criterion test.

Each of the 82 first graders who had been selected for participation in the study and had been granted parental permission to be in the study was given the Beginning Reading I diagnostic criterion test. This diagnostic pretest was administered to determine that the first grader could indeed benefit from the tutoring treatment and also to insure statistical equivalence of the treatment and control groups. Having obtained parental consent and completed the pretesting, the first phase of the study was completed. The next phase of the study was the training of the tutors and the mastery checking of their tutoring skills. This phase was completed within two weeks. After finalizing the scheduling of the tutoring groups with the first grade teachers tutoring began. The handicapped tutors and first grade tutees were divided into pairs or tutoring teams. Three or four tutoring teams would tutor per each session. The aide would accompany the teams to the tutoring location, would have the daily tutoring assignment for each team and then supervise the tutoring session. Each team of tutors would work on the assigned tutoring assignment for a period of 15-20 minutes. At the conclusion of the session each tutor would report the tutee's progress and each of the students would return to their classes. When the first group of tutors completed their session, the aide would then take the next group of tutoring teams. This process was repeated until all of the groups of tutors at each of the three schools had completed their daily tutoring assignments. This procedure was followed four days a week for a treatment period of 14 weeks, or approximately 18-20 hours of actual treatment.

To make the time on reading tasks comparable to the treatment group, the first grade control group of students received additional reading help. The first grade teachers reported that the control students received approximately the same amount of time in additional reading help by participating in a program of reading to fifth graders from the regular classes and receiving additional, individual help from the teacher or a teacher's aide.

At the conclusion of the 14 week treatment period, the self-esteem and reading posttests were administered to the handi- capped tutors and controls. The handicapped students who were pretested at below a third grade reading level on the Woodcock- Johnson reading battery were also given the Beginning Reading I criterion posttest. The 82 first grade tutees and controls were posttested with the Beginning Reading I criterion posttest and also the Woodcock-Johnson reading subtests.

After the posttest data were gathered, the researcher interviewed the parents or guardians of the handicapped tutors, the ten first grade teachers who had students who received the tutoring treatment, and the 4 special education teachers of the handicapped tutors. To insure consistency and reliability of these telephone interviews, a structured interview schedule was developed and utilized to gather information concerning teacher and parental perceptions of the tutoring experience. The use of the structured interview schedule also facilitated easier summarization and categorization of the interview data for analysis. A speciman copy of each interview schedule may be found in Appendix P.

Data Analysis

Two important conditions existed with this study that dictated the type of statistical analyses that could be appropriately used. First, the research design called for a pretest/posttest design with non-equivalent control groups. With this type of design, it was important that an analysis of covariance be conducted. The use of the analysis of covariance procedure was to control statistically for initial differences which might have been present and which might have confounded the posttreatment differences between the two groups of students (Huck, Cormier and Bounds, 1974). This type of analysis provides a more sensitive statistical analysis than merely analyzing the posttest data.

Secondly, because of the potential for a relationship between many variables, such as reading ability and self-esteem; and that the data included simultaneous measurements on many variables of interest a multivariate analysis is required (Johnson and Wichern, 1982).

These conditions and the types of data collected made it necessary to conduct three types of statistical analyses: 1) multivariate analysis of covariance, 2) simple one-way analysis of covariance, and 3) content analyses of the qualitative data.

Multivariate analysis of covariance made it possible to simultaneously measure treatment effects on and relationships between many variables. Covariates are used to control for initial differences and are selected by the criterion of being highly correlated until the variables of interest. For analysis of the handicapped students' data, two covariates were selected as being the most highly correlated variable (using Pearson correlation coefficients) ---SPAS Total Score and the Woodcock-Johnson Total reading score. These two covariates were used in the multivariate analysis of self-esteem and reading achievement, respectively.

In testing the first two research hypotheses, three multivariate analyses of covariance were conducted. This was done to examine the effects of reverse-role tutoring on both reading achievement and self-esteem. The first analysis examined the three self-esteem posttest total scores and the Woodcock-Johnson reading posttest total scores.

Since both the dependent variables of reading achievement and self-esteem were being examined simultaneously both covariates were included in the analysis. This first multivariate analysis of covariance yielded a general or overall picture of the effects of the tutoring treatment on the total scores of self-esteem and reading achievement.

In continuing to test the first two research hypotheses, it was decided to conduct additional analyses to examine more exactly the effects of the tutoring on specific aspects of self-esteem and reading skill. To do this separate multivariate analyses of covariance were conducted. A second multivariate analysis of covariance was conducted to examine the treatment effects on preselected self-esteem subscales. Since this analysis was only concerned with self-esteem variables, a single covariate was used (SPAS Total pretest score) with the reading covariate being dropped from the model.

The third multivariate analysis of covariance was an additional test of the hypothesis that reverse-role tutoring would significantly improve reading achievement. The effects of the tutoring on specific reading skills, as defined by the Woodcock-Johnson reading subtest, were examined. Since this analysis only examined reading achievement the self-esteem covariate was dropped from the model and only the Woodcock-Johnson total pretest score was used as the single covariate.

As an additional analysis of reading achievement, a simple one-way analysis of covariance was conducted on the Beginning Reading I Decoding posttest data for the 50 handicapped tutors and controls who were below a third grade reading level when pretested with the Woodcock-Johnson Reading battery. A simple one-way analysis of covariance was done because only one variable was being examined--decoding skills. The Beginning Reading I Decoding pretest score served as the covariate to control for the initial differences between the two groups. This statistical procedure also produced for comparison purposes adjusted or estimated posttest mean scores for each group.

Since the study did not examine the effects of the tutoring on the self-esteem of the first grade tutees and controls, two separate multivariate analyses of covariance were conducted to measure reading achievement in general, and specific reading skills affected by the treatment. The Beginning Reading I Decoding pretest score was used as the covariate for both analyses. The first analysis examined the effects of the treatment on the four subtests of the criterion posttest, Beginning Reading I. These four subtests of interest were Consonant sounds, Short Vowel sounds, Combination sounds, and Decoding or blending skills. A second analysis was conducted examining the treatment effects on the six variables of the norm-referenced Woodcock-Johnson Reading battery. These six variables of interest were Word Attack raw score, Letter-Word Identification raw score, Passage Comprehension raw score, Total Score, Adjusted Grade Level and Adjusted Age Level. Included in the multivariate analysis of covariance procedures is a statistical procedure that gives an adjusted posttest mean for both the treatment and control groups on each of the variables of interest. The adjusted means for the two groups represent the best possible estimates as to the mean scores the groups would have actually obtained on the posttest if they had started out with identical pretest scores.

The content of the qualitative data gathered through the structured interviews with parents and teachers was analyzed in two ways. First, frequencies and percentages of responses were reported for certain categories. Secondly, verbatim responses, examples and anecdotal descriptions of effects were also reported to confirm or disconfirm the quantitative data findings and to answer the research questions concerning the perceptions of parents and teachers regarding the tutoring experience.

RESULTS

This section will report the findings of the study in three separate areas of the research: (a) self-esteem and reading achievement of the handicapped tutors and controls, (b) reading achievement of the first graders who served as tutees and controls, and (c) parental and teacher perceptions of the effectiveness and benefits of the tutoring program.

Self-Esteem and Reading Achievement of Handicapped Students

The first multivariate analysis of covariance showed that there was indeed a significant difference between the treatment and control groups due to the tutoring. The multivariate test of significance indicated that on at least one of the three self-esteem total scores and the Woodcock-Johnson reading ttoal score significant differences existed between the treatment and control groups. The Hotillings T^2 multivariate test's significance level was .003. By examining the univariate F-tests and the pretest, posttest and adjusted means, it can be seen that there was indeed a significance difference between the groups on the Woodcock-Johnson reading total score. Table 3 summarizes the univariate F-tests and gives the pretest, posttest and adjusted means for each of the variables. It can be seen that there were no statistical significance differencesbetween the groups on the self-esteem total scores, but a strong significant difference (p=,.001) existed between the groups on the Woodcock- Johnson Reading pretest total score. The adjusted posttest mean for the control group was 477.5 compared to the treatment group's adjusted mean of 485.5.

The second multivariate analysis of covariance examined the effects due to the treatment on the selected self-esteem subscales. Once again

Table 3

Summary of Multivariate Analysis of Covariance of the Treatment and Control Groups' Performance on the Total Scores of the Esteem and Reading Standardized Tests

Summary of Multivariate Analysis of Covariance

Type of Test	Value	Hypoth. df	Error df	F	Signif.
Hotelling's T^2	.252	4	71	4.49	.003
Wilk's Lambda	.798	4	71	4.49	.003

Summary of Pretest, Posttest and Adjusted Mean Scores and Univariate F-tests of Significance

Variable	Group	Pretest M	Pretest SD	Posttest M	Posttest SD	Adjusted M	Adjusted F
Piers-Harris	Treatment	53.4	12.6	54.7	12.6	52.7	
Total	Control	50.0	13.7	52.8	13.5	54.8	.65
SPAS	Treatment	41.7	11.8	43.8	11.3	40.6	
Total	Control	34.8	15.1	37.7	15.5	40.9	.03
Inferred Self-Concept	Treatment	102.6	15.9	104.3	10.2	104.8	
Total	Control	104.5	10.5	104.4	13.6	104.0	.08
Woodcock-Johnson	Treatment	479.0	20.7	489.9	18.1	485.5	
Reading Total	Control	468.9	16.6	473.2	17.5	477.5	17.79**

Treatment Group N=39
Control Group N=39

**p , .01

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the Hotellings T^2 multivariate test showed that there were significant differences between the treatment and control groups on at least one of the self-esteem subscales (p=.017). A careful examination of the multivariate F-tests showed that there were significant differences due to the treatment on two of the variables of interest -- SPAS General Ability (p=.024) and the SPAS Reading/Spelling subscale (p=.049). There were no statistically significant differences between the groups on any of the other self-esteem subscales. Table 4 summarizes the pretest, posttest, adjusted posttest scores, and the univariate F-tests of significance for each of the self-esteem subscale scores. From Table 4, it can be seen that the adjusted posttest means for each group on the SPAS General Ability subscale is 5.6 for the control group compared to 7.3 for the treatment group. The adjusted means on the SPAS Reading/Spelling subscale were 6.3 for the controls goup and 7.6 for the treatment group. Pretest and posttest scores as well as the levels of significance for all the other self-esteem variables can be seen in greater detail in Table 4.

Probably the strongest and most conclusive data in the study were regarding the reading achievement of the handicapped tutors. The third multivariate analysis of covariance showed a strong significant difference (p=,.001) between the experimental groups on at least one of the subtests or variables of interest of the Woodcock-Johnson Reading battery. An examination of the univariate F-tests show that there were significant differences between the treatment and control groups on three of the five reading achievement variables of interest -- Word Attack (p=.001), Passage Comprehension (p=.004), and the Adjusted Grade Level (p=.041).

Table 4

ummary of Multivariate Analysis of Covariance of the Treatment and Control Groups' Performance on Selected Self-Esteem Subscales

ummary of Multivariate Analysis of Covariance

ype of Test	Value	Hypoth.df	Error df	F	Signif.
Hotelling's T^2	.301	8	68	2.56	.017
lk's lambda	.768	8	68	2.56	.017

ummary of Pretest, Posttest and Adjusted Mean Scores and Univariate F-Tests Significance

ariable	Group	Pretest M	Pretest SD	Posttest M	Posttest SD	Adjusted M	Adjusted F
iers-Harris: ehavior	Treatment	11.2	3.7	11.8	3.4	11.5	
	Control	10.8	3.0	11.0	3.6	11.3	.12
Piers-Harris: ntellectual & School Status	Treatment	11.2	3.6	11.5	3.4	10.9	
	Control	10.5	4.5	11.0	3.8	11.6	.96
iers-Harris: appiness	Treatment	8.5	4.3	8.0	2.1	7.8	
	Control	7.5	2.3	7.8	2.1	8.0	.33
SPAS: eneral Ability	Treatment	6.1	2.7	7.6	3.1	7.3	
	Control	4.6	3.1	5.3	3.6	5.6	5.32*
SPAS: ading/Spelling	Treatment	7.7	2.8	8.1	2.9	7.6	
	Control	5.5	3.8	5.8	3.7	6.3	4.01*
SPAS: onfidence	Treatment	4.7	2.4	4.8	2.1	4.4	
	Control	3.7	2.5	4.4	2.5	4.7	.61
Inferred Self-Concept: elf-Conformance	Treatment	46.4	11.9	45.8	7.0	45.9	
	Control	46.1	7.5	43.3	8.9	43.2	2.00
Inferred elf-Concept: elf-Attitude:	Treatment	35.7	6.2	36.5	5.4	36.3	
	Control	37.5	4.9	38.0	5.4	38.2	2.19

reatment Group N=39
ontrol Group N=39

*p , .05

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Only the subtest Letter-Word Identification and the Adjusted Grade Level variables showed no significant differences due to the treatment. Table 5 summarizes in detail the pretest, posttest, adjusted posttest scores and the significance levels for each group on the separate variables. On the Word Attack subtest, the adjusted posttest mean for the control group was 8.8 compared to a significantly different treatment group's adjusted posttest mean of 14.3. On the Passage Comprehension subtest, the adjusted posttest mean for the control group was 11.0 as compared to the treatment group's adjusted mean of 12.5. This is a very important result because Passage Comprehension is usually the most difficult of the reading skills to significantly affect with a short-term treatment intervention. On the adjusted grade level variable, it can be seen that there was a half-year difference in reading level as a result of the tutoring treatment. The adjusted post-treatment grade level of the control group was 3.3 as compared to a 3.8 adjusted posttest mean grade level for the treatment group. For the handicapped tutors and controls who were initially below the third grade reading level, an analysis of covariance showed a significant difference between the treatment and control groups on the Beginning Reading I criterion Decoding posttest. Table 6 illustrates the difference due to treatment at .001 level. Table 6 also gives the adjusted mean scores for both groups which controls for the initial differences that existed on the Beginning Reading I criterion Decoding pretest. The treatment group had an adjusted criterion decoding mean of 51.5 compared to 30.9 for the control group.

Table 5

Summary of Multivariate Analysis of Covariance of the Treatment and Control Groups' Performance on the Woodcock-Johnson Reading Subtests and Selected Variables

Summary of Multivariate Analysis of Covariance

Type of Test	Value	Hypoth.df	Error df	F	Signif.
Hotelling's T^2	.803	5	71	11.40	,.001
Wilk's lambda	.555	5	71	11.40	,.001

Summary of Pretest, Posttest, and Adjusted Mean Scores and Univariate F-Tests of Significance

		Prestest		Posttest		Adjusted	
Variable	Group	M	SD	M	SD	M	F
Letter-Word	Treatment	28.5	6.9	30.5	6.0	29.0	
Identification	Control	25.7	5.9	27.4	5.9	28.9	.04
Word Attack	Treatment	10.0	4.5	15.0	4.5	14.3	
	Control	7.6	3.2	8.1	3.9	8.8	49.75**
Passage	Treatment	11.3	4.0	13.3	3.8	12.5	
Comprehension	Control	9.2	3.4	10.2	3.4	11.0	8.99**
Grade Level	Treatment	3.4	1.9	4.2	2.3	3.8	
	Control	2.7	.9	2.9	1.1	3.3	2.03

Treatment Group N=39
Control Group N=39

**p ,.01

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Table 6

ummary of Analysis of Covariance of Below-Third Grade Reading Level Tutors' and Controls' Performance on Criterion Beginning Reading I Decoding Skills Posttest

ummary of Analysis of Covariance

ource	SS	df	MS	F	Significance
Treatment	5226.76	1	5226.76	59.3	,.001**
Regression	1149.59	1	1149.59	13.0	.001
ovariate	13766.26	1	13766.26	156.1	,.001
Error	4144.53	47	88.18		

Summary of Prestest, Posttest, and Adjusted Posttest Means on Criterion Beginning Reading I Decoding Skills Test

		Pretest		Posttest		
				Obtained		Adjusted
xperimental Group	N	M	SD	M	SD	M
eatment	23	22.3	11.0	52.1	8.8	51.5
Control	27	19.6	14.0	30.4	11.8	30.9

**p ,.01

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Reading Achievement of First Graders

For the first grade tutees and controls, separate multivariate analyses of covariance were conducted on the results of the criterion posttest and the standardized reading achievement test. In each case significant differences due to the treatment and control groups. Table 7 shows a summary of the multivariate analysis of covariance of the Beginning Reading I criterion posttest. The Hotelling's T^2 multivariate test of significance ($p = .001$) indicates a strong statistical significance on at least one of the criterion subtests. As can also be seen from Table 7, all of the Beginning Reading I criterion subtests showed a significant difference between the treatment and control groups due to the tutoring treatment. On the subtest-Consonants, the treatment group's adjusted posttest mean was 19.1 compared to 17.6 for the control group. For the subtest - Short Vowels, the adjusted or estimated posttest means, adjusted to control for initial differences, were 4.5 for the treatment group and 3.1 control group. On the posttest measuring Combinations, the treatment group scored significantly higher than the control group with adjusted means of 4.3 and 3.1, respectively. On the important subtest which measured Decoding skills, the adjusted mean of the treatment group was 41.2, which was significantly higher than the control group's adjusted mean of 24.7. The adjusted posttest means for each of the four criterion subtests showed strong significant differences between the treatment and control groups.

While it could be assumed that the treatment group would make significant gains on a criterion measure, the results also show that there were likewise significant differences between the experimental

Table 7

ummary of Multivariate Analysis of Covariance of the First Grade Treatment and Control Groups' Performance on the Criterion Beginning Reading I Posttests

Summary of Multivariate Analysis of Covariance

ype of Test	Value	Hypoth.df	Error df	F	Signif.
otelling's T^2	.482	4	75	9.04	,.001
ilk's lambda	.675	4	75	9.04	,.001

ummary of Pretest, Posttest, and Adjusted Mean Scores and Univariate F-Tests of Significance

		Pretest		Posttest		Adjusted	
Variable	Group	M	SD	M	SD	M	F
Consonants	Treatment	15.3	3.8	19.1	1.7	19.1	
	Control	15.4	3.7	17.6	2.0	17.6	15.07**
hort Vowels	Treatment	2.6	1.6	4.5	1.0	4.5	
	Control	2.4	1.7	3.1	1.6	3.1	25.53**
ombinations	Treatment	1.2	1.2	4.2	1.1	4.3	
	Control	1.1	1.2	3.3	1.2	3.2	23.40**
ecoding	Treatment	3.3	3.0	40.2	17.2	41.2	
	Control	4.5	7.5	25.3	18.3	24.7	24.17**

reatment Group n=37
Control Group n=45

**p ,.01)

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groups on the standardized Woodcock-Johnson Reading subtests. A multivariate analysis of covariance showed that there was a significant difference due to treatment on at least one of the standardized test variables of interest. Table 8 summarizes the multivariate test of significance and the univariate F-tests with the obtained and adjusted posttest mean scores. No pretest score is given because the Woodcock- Johnson standarized reading test was given as a posttest only and was analyzed using the criterion Decoding pretest as the covariate. It can be seen from Table 8 that only the Woodcock- Johnson Subtest: Word Attack showed a significant difference due to treatment between the two groups. This difference was significant at ,.001 level. The adjusted Word Attack posttest mean for the treatment group was 10.0 compared to 6.8 for the control group.

In summary, the results show that the first grade students who participated in the reverse-role tutoring experience made significantly greater gains on the four criterion subtests (Consonants, Short Vowels, Combinations, and Decoding) and the standarized Word Attack subtest than the students who were not tutored by the handicapped tutors.

Parent and Teacher Perceptions of the Tutoring Program

Thirty-four (87%) of the parents of the 39 handicapped tutors were interviewed at the conclusion of the study. Parents of five (13%) handicapped tutors were unable to be interviewed. The percentages reported here are based on the 34 parents who were interviewed.

When asked to describe how their child feld about their participation as tutors in this study, 25 (73%) reported that their child felt "Very Positive" about the program, 7 (21%) reported that their child had "Positive" feelings about it. Only one (3%) parent parent reported that

Table 8

ummary of Multivariate Analysis of Covariance of the First Grade Treatment and Control Groups' Performance on the Woodcock-Johnson Standardized Reading Subtests

Summary of Multivariate Analysis of Covariance

ype of Test	Value	Hypoth. df	Error df	F	Signif.
otelling's T^2	.257	4	76	6.58	,.001
ilk's lambda	.743	4	76	6.58	,.001

ummary of Posttest and Adjusted Mean Scores and Univariate F-Tests of Significance

Variable	Group	Posttest M	Posttest SD	Adjusted M	Adjusted F
Letter-Word Identification	Treatment	20.0	4.4	20.2	
	Control	20.1	3.6	20.0	.07
ord Attack	Treatment	9.8	4.0	10.0	
	Control	7.0	3.8	6.8	17.22**
ssage Comprehension	Treatment	6.2	2.4	6.3	
	Control	7.4	6.0	7.3	1.07
tal Score	Treatment	457.2	13.0	457.4	
	Control	444.6	68.5	444.5	1.24

reatment Group n=37
Control Group n=45

**p ,.01

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their child had "Negative" feelings about the tutoring experience. One parent (3%) report "No Opinion" because the child had made no comments about the program. None of the parents reported "Very Negative" feelings from their children concerning the tutoring. Even the parent who reported that their child had negative feelings about the program qualified her response by saying that even though he felt negative about it, "it was good for him to participate."

In reporting their own personal feelings as parents about their child participating in this reverse-role tutoring experience, no parents report "Negative" or "Very Negative" feelings. In contrast, 28 (83%) of the parents reported that their feelings were "Very Postitive" and 6 (18%) of the parents responded that their feelings could be classified as "Positive." This overwhelming positive parental perception of the tutoring program was not initially so positive. Several of the parents commented that they were very apprehensive about having their child, who had special academic needs, taken out of their regular class to tutor others. Some feared that their child would not be able to tutor because of their academic limitations. All of these parents reported that these initial concerns dissipated as their child spent more time in the tutoring experience.

When asked whether the tutoring program had had observable effects on their child's reading ability, self-esteem, and social interaction, the responses of the parents were somewhat mixed. Twenty-seven (79%) parents reported that the tutoring experience had positively affected their child's reading ability compared to seven (21%) who felt that there had been no observable effect on reading ability. Concerning the tutoring program's effects on the self-esteem of the handicapped tutors, the parents were overwhelmingly in agreement that self-esteem had been affected most positively by the tutoring experience. Of the 34 parents interviewed, 31 (91%) reported observable improvements in the self-esteem of their child. Only three parents (9%) indicated that they had seen no change, either positively or negatively, in their child's self-esteem. Of these three characteristics, the parents indicated that social interaction skills was the least likely to be affected as a result of the reverse-role tutoring. The parents were quite evenly split in their responses with 15 (44%) citing positive effects on social interaction as compared to 19 parents (56%) that felt that there had been no observable change as a result of the tutoring.

Table 9 reveals the specific types of effects of the tutoring program cited by the parents could cite more than one effect and some parents did not cite any. As a result, the percentages reported are based on the total number of effects cited and the total number of parents interviewed. It can be seen in Table 9 that improvement in reading skills was the most commonly cited effect on reading (47%). Closely associated with this effect was a marked improvement in the students' attitudes about reading in general (29%). The most profound effect of the tutoring experience on self-esteem, as reported by 85% of the parents, was an increased feeling of self-worth and capability. The most commonly cited effect on social interaction was increased firendliness and being more outgoing (23%), with parents also citing that their children had more involvement with others in activities and games since the tutoring (21%).

Table 9

ummary of Parental Responses Concerning Specific Types of Effects of the Tutoring Program on Reading Ability, Self-Esteem and Social Interaction Skills

ype of Effect	Frequency (N=34)	Percent* Parents	Percent** Responses
EADING ABILITY:			
Increased amount of reading	5	15%	13%
mproved attitude about reading	10	29%	26%
mproved reading skills	16	47%	42%
Improved comprehension	5	15%	13%
Greater confidence about reading	2	6%	5%
Total Responses	38		100%
SELF-ESTEEM:			
ncreased academic confidence	8	23%	19%
Greater feeling of self-worth and capability	29	85%	69%
etter attitude about school	5	15%	12%
Total Responses	42		100%
OCIAL INTERACTION SKILLS:			
Better relationship with family	4	12%	13%
Felt like and accepted more by others	6	18%	19%
reater involvement in activities and games with others	7	21%	23%
Increased friendliness and ore outgoing personality	8	23%	26%
ncreased desire to help others	5	15%	16%
Improved communication skills	1	3%	3%
Total Responses	31		100%

* Percentages in each category are based on the numbers of parents interviewed. The table of percentages exceede 100% because many parents gave more than one response.

** Percentages in each category are based on the number of effects cited rather than on the number of parents interviewed.

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While the table can illustrate the frequencies and percentages of responses, the anecdotal responses of parents give even greater insights into the perceived benefits of this study on the handicapped tutors. It would be virtually impossible to cite all of the verbatim accounts of the parents, but a few anecdotal accounts of parents will be highlighted in this report which represent the feelings and responses of the parents interviewed.

One mother of a sixth grade, learning disabled student said that as a result of this tutoring experience, "For the first time since he has been in school, he was able to sit down and read a book to me." Another mother of a learning disabled tutor reported that since her daughter has now mastered some of the basic reading mechanics she has started reading more difficult and challenging books that she would not have even attempted a few months ago. Besides the actual reading improvement, many parents reported an improved attitude about reading. One of the parents characterized this by reporting that her son practiced reading a lot more at home to make sure that he would be a good tutor. This additional practice led to reading many more books and as a result, reported this mother, "Our son discovered that he enjoyed reading."

Many specific examples of how self-esteem had been affected by the tutoring experience were also given by the parents. The parents of a fifth-grade LD tutor stressed the increased feeling of self-worth. "From previous experiences in school he thought of himself as a real dummy," reported the parent. "This made him feel capable - that he could actually do something important in school. Now he loves to go to school and even enjoys doing his homework and he used to just hate it."

Another parent emphasized this increased feeling of self-worth as she told of her LD daughter decorating her room with the small ribbons, stickers and recognitions that she had received in the tutoring program. "She constantly talks about the tutoring," the parent said. "She is very proud of herself and what she was able to do. She took this tutoring very seriously. It was the highlight of her school year." Another mother an LD/BH student stressed the value of this experience in ehlping her son feel competent and helping raise his academic sights. "He really feels like somebody now. He told us that his goal now is to be a doctor. We were taken back by this lofty goal from a sixth grader who can barely read. We told him that he would have to have really good grades in school. He responded by saying, 'I'm doing a lot better in school now because I'm teaching another kid to read.' He now feels he can achieve academically."

The parent of a BH student reported that this tutoring experience had helped her son feel accepted and liked by others. "He viewed that little first-grader as one of his best friends," she said. "He used to be resentful of school because he was so often ostractized and made fun of, but now there is a feeling of acceptance and importance." Other parents discussed the social interaction benefits from participation in the tutoring. One mother of a Resource LD students reported that her son became much easier to get along with at home. "He used to be so resentful of his four year old brother, but he now shows greater interest in him. He really enjoys reading stories to him." Another parent reported that the handicapped child now has been teaching his younger first grade sister how to read, using the tutoring skills he learned. Other social interaction benefits were also highlighted by the parents. The grandmother of a fourth grade Resource student reported, "He used to be quite withdrawn, afraid to try new things to get involved. But I have seen a big change since this tutoring. He is much more willing to be involved in all kinds of activities in and out of school. It has really helped bring him out of his shell."

Another interesting result of participation in the tutoring program reported by the parents was the dramatic increase in the amount of reading that the handicapped tutors did at home. Of the 34 parents interviewed, none of them reported a decrease in the amount of reading their child did at home. Nine parents (26%) said they saw no change as compared to 25 parents (74%) who felt their child did considerably more reading at home since the tutoring program began. This increase in the amount of reading can be interpreted as a benefit of the tutoring experience in and of itself. This increase is closely related to the actual reading skills improvement and the improved attitude toward reading. As one mother of a BH student reported, "All of a sudden he started on his own to read about things in the encylopedia. It was totally self-initiated." Another parent reported that their son had received over 80 Disney storybooks from his grandparents, but had never read any of them on his own. He now was reading the books each night before bedtime. She reported, "He even had his grandfather take him to the library to get a library card so he could check out books from the library. Before the tutoring, he wouldn't even read the books he had at home."

When asked if they would like to see this type of reverse-role tutoring program continued and/or expanded in the schools, 33 parents

(97%) expressed the desire that it be continued and expanded. Only one parent (3%) said that she would not want to see it expanded or continued, because she felt that students were being taken out of their classes too much for special programs.

The parents were similarly very positive about having their own children participate again in the tutoring program. Only three (9%) of the parents did not want their children to participate again in the program as compared to 31 (91%) who said they definitely want their child to participate again in this type of tutoring experience. The three parents who did not want their child in the program again because their children had gotten behind in their academic work because of the time out of their regular classes for tutoring.

The parents were also asked to make recommendations as to how the tutoring program could be enhanced. The majority of the parents (19 parents or 56%) said they had no recommendations and felt that it should be continued as it was done in this research study. Of the remaining 15 parents (44%) who cited recommendations, the two most commonly cited suggestions were to (a) educate parents more about the tutoring program so they could be more supportive at home (47%), and (b) improve the scheduling to reduce the amount of time out of class and minimize missing out on academic work (26%).

Teachers of the students involved in this study, both first grade tutees and handicapped tutors, were strongly supportive of the reverse-role tutoring experience. All 10 (100%) of the first grade teachers reported that their students felt "Very Positive" about participating in the program. Seven (70%) of the first grade teachers reported their personal feelings about the tutoring program as "Very Positive" with three (30%) citing "Positive" feelings. It is also interesting to note that seven of these first-grade teachers reported that they had strong apprehensions or negative feelings about reverse-role tutoring before the study actually began. In contrast to these initial negative perceptions, none of the teachers reported any negative feelings about the tutoring program at the conclusion of the study.

The four special education teachers also shared these positive feelings about the tutoring program. Two (50%) of the teachers reported that their handicapped students felt "Very Positive" about their participation with the other two (50%) reporting "Positive" student feelings. One teacher qualified her response by saying that her students were initially quite negative about the program, but as it progressed and as they received awards and recognitions for their efforts, their feelings became very positive.

Reporting on whether the tutoring program had had observable effects on the tutees, nine first grade teachers (90%) felt that there were indeed observable effects due to the tutoring. None of the teachers said that there had been no effects. All four (100%) of the special education teachers reported that the tutoring had had considerable, observable effects on the handicapped tutors.

Table 10 gives the specific types of effects of the tutoring program on the first grade tutees and the handicapped tutors as cited by the fourteen teachers. The teachers cited reading skills improvement as the most obvious effect on the first grade tutees. It was cited most frequently by the teachers (60%). The teachers' most frequently cited effects of

Table 10

ummary of Teachers' Responses Concerning Specific Types of Effects of the Tutoring Program on First Grade Tutees and Handicapped Tutors

Type of Effect	Frequency (N=14)	Percent* of Teachers	Percent** of Responses
IRST GRADE TUTEES:			
Reading skills improvement	12	86%	60%
mproved attitude about reading	1	7%	5%
reater academic confidence	3	21%	15%
Improved self-esteem	2	14%	10%
Positive social interaction with older students	1	7%	5%
ore difficult to work independently	1	7%	5%
Total Responses	20		100%
ANDICAPPED TUTORS:			
Improved self-esteem	7	50%	28%
ncreased sense of responsibility	5	36%	20%
ncreased kindness/courtesy (appropriate social interaction)	5	36%	20%
mproved school behavior	3	21%	12%
mproved reading skills	3	21%	12%
Got behind in academic work	2	14%	8%
Total Responses	25		100%

* Percentages for each group are based on the number of teachers who cited the effect. The total of percentages exceeds 100% because many respndents cited more than one effect.

** Percentages for each group are based on the number of effects cited rather than on the number of teachers interviewed.

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tutoring on the handicapped students were (a) improved self-esteem (50%), (b) increased responsibility (36%), and (c) increased kindness and courtesy toward others (36%).

Table 11 shows the specific "Strengths" and "Weaknesses" of the reverse-role tutoring model as cited by both the first grade and special education teachers. Most of the teachers cited several strengths and weaknesses and some did not cite any. As a result, the percentages reported in the table are divided into two categories: 1) the percentage of the total number of responses, 2) the percentage of the teachers who cited the specific response. It can be seen from Table 11 that the teachers felt that the three most important strengths of reverse-role tutoring, as done in this study, are (a) academic growth for both groups (64%), (b) individualized instruction (50%) and (c) providing an additional resource program for the benefit of students (43%). The primary weaknesses of this program, as reported by the teachers were the difficulties in scheduleing (57%) and that students may get behind in their schoolword because of being pulled out of class to tutor or be tutored (50%).

In responding to whether they would like to see this type of tutoring program continued and/or expanded in the schools of the future, 13 (93%) wanted it continued and expanded. None of the teachers expressed the desire to see the program discontinued, but one teacher (7%) was "undecided" because she felt that she did not know enough about the program or its benefits. All 14 teachers expressed an enthusiastic desire to have students from their respective classes participate again next year in this type of tutoring experience.

Table 11

ummary of Teachers' Responses Concerning Strengths and Weaknesses of the Reverse- Role Tutoring Program

Specific Response	Frequency (N=14)	Percent* of Teachers	Percent** of Responses
STRENGTHS:			
Academic growth for both groups (reinforcement/review of reading)	9	64%	28%
ndividualized instruction	7	50%	22%
Additional resource program	6	43%	19%
Improved self-esteem for both groups	5	36%	16%
eaching responsibility to tutors	2	14%	6%
ositive social interaction between handicapped and non-handicapped	3	21%	9%
Total Responses	32		100%
EAKNESSES:			
cheduling	8	57%	40%
aking students out of class causes them to miss or get behind academically	7	50%	35%
Disruptive to classes and classroom instructional activities	4	29%	20%
Management/Administration	1	7%	5%
Total Responses	20		100%

* Percentages for each category are based on the number of teachers who cited the response. The total of percentages exceeds 100% because many teachers gave more than one response.

** Percentages for each category are based on the number of responses cited rather than on the number of teachers interviewed.

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Suggestions for improving the tutoring experience for both teachers and students, as cited by the 14 teachers centered on three important recommendations. First, the teachers felt strongly that the scheduling of the tutoring had to be improved to lessen the disruptiveness to their instructional activities and to insure that students were not missing out in important instruction or assignments in their classes. This was the most frequently cited recommendation (31%). Secondly, the teachers called for greater education of both teachers and parents regarding the tutoring program. They felt is was very important to know exactly what their students were doing and what materials were being used. This was the second most frequently cited suggestion (27%). The third most frequently cited recommendation for im- provement was calling for a closer coordination of the tutoring with the actual reading instruction of the first grade classes (15%).

In summarizing the perceptions of the parents and teachers concerning the effectiveness and benefits of this reverse-role tutoring experience, it can be stated that both groups were overwhelmingly positive. While many in both groups expressed initial apprehensions and fears about having handicapped students tutor younger non-hnadicapped students in an academic subject, they overwhelmingly approved of the concept and expressed a strong desire that such a system be continued in the schools with their students. The primary benefits of the reverse-role tutoring experience cited by both groups was the dramatic increase in reading ability by both tutees and tutors and the increase in feelings of self-worth among the handicapped tutors. While the quantitative data results indicated reading improvement as the greatest beneficiary of this study, the qualitative data gathered from parents and teachers seemed to indicate that the affective domain, such as self-esteem and attitudes about reading and school in general, were benefitted most from the reverse-role tutoring.

EXPERIMENT 3:

LEARNING DISABLED AND BEHAVIORALLY DISORDERED STUDENTS AS PEER TUTORS

The objective of this part of the project was to determine whether handicapped students could effectively tutor other handicapped students. Outcomes investigated in this study included academic (reading) functioning and social/emotional functioning as measured by attitudes toward self, school, and reading. In this investigation, tutors were expected to be similar in age and ability level, although all were expected to be functioning well below grade level academically and/or socially.

Although handicapped students have often been employed as tutees in investigations such as this, researchers have rarely addressed the use of learning disabled or behaviorally disordered students as tutors tutoring other handicapped students (see literature review in Appendix Q). The benefit of peer tutoring in special education settings was expected to be that (a) both students of each tutoring pair would ostensibly be directly working on material at an optimal academic level for each tutor, and (b) because, particularly in resource rooms, students tend to be scheduled to resource settings and ability groups, it was felt that peer tutors could more easily be fit into regular academic scheduling. In addition, it was thought that the peer tutoring intervention might be of particular benefit to the resource or self-contained teacher in that, if properly implemented, the teacher could rely upon students to tutor each other while the teacher himself or herself was directly engaging other students in teacher-led instruction. To this extent, peer tutoring in these settings could be regarded as a potentially more effective way to monitor practice activities before or after teacher-implemented lessons in the classroom.

Although the use of peers as tutors was thought to be beneficial in many ways, several drawbacks were hypothesized at the beginning of this project. These potential drawbacks included the following: (a) that neither student would necessarily be functioning at a level of mastery on the materials and, therefore, the possibility of difficulties with appropriate corrective feedback or the potential for errors not to be corrected would be expected to be much more substantial than in cross-age tutoring, and (b) since previous researchers such as Allen (1976) have indicated that one benefit of tutoring was the fact that the younger tutee may look up to the older tutor, this benefit would not be obtainable in a peer tutoring setting. In addition, there was the potential that this lack of a predetermined "tutor" could result in some difficulties, particularly with respect to the observed deficits in social functioning and maturity commonly observed in learning disabled and behaviorally disordered students (Bryan & Bryan, 1981).

The outcome of the following tutoring intervention, therefore, was far from a foregone conclusion. Literature reviews conducted by the present investigators (see Appendix Q) failed to shed light on the particular issues of importance to utilization of age and ability peers as in tutoring interventions in special education. In addition, the choice of appropriate academic and social measures for this project was in some question due to the often conflicting evidence of benefit on self-esteem and attitude toward school measures (c.f. Allen, 1976; Cohen, Kulik, & Kulik, 1981). It was thought necessary, therefore, to employ a pilot investigation in which a small sample of handicapped students would be chosen to act as peer tutors to each other so that an opportunity would thus be gained to investigate and to evaluate the effectiveness of this type of program on a small scale and also to investigate the effectiveness of potential measurement devices to be sensitive to this type of intervention. The pilot investigation was conducted on a small scale so that it could be observed carefully and decisions could be made regarding the best method to proceed with the larger peer tutoring experimental study later in the school year. Although it was not possible to employ a control group in a small study of this size, it was possible to gain insight into the manner in which this type of tutoring intervention might proceed and the ability of selected measures to record any progress.

Pilot Study

Subjects

Subjects were four elementary-age students involved in two tutoring pairs from each of two schools in the Cache School District. These four students represented grade levels 2 through 5 and had all been identified as learning disabled (LD) by Public Law 94-142 and local school district criteria which included a 40% discrepancy between actual performance and ability in each of at least two specific academic content areas. These two pairs had been recommended by each of two teachers in the two separate schools as having potential for effectively implementing this tutoring procedure. Three of the subjects were boys and one was a girl.

Materials

Tutoring materials. Materials to be used during the tutoring intervention were Grant Von Harrison's "Beginning Reading" materials (1979). These materials had been developed and previously employed in interventions referred to as "Structured Tutoring" (Harrison, 1976) and had been found effective in meeting several necessary requirements of effective tutoring interventions:

1. These materials follow a specific scope and sequence in lesson format with individual steps including letter sounds, letter blends, nonsense words, whole words, sight words, sentences, and, finally, stories that are read in carefully sequenced order. In these materials, one skill builds directly upon previously acquired skills and also reviews those skills which have previously been learned. Materials presented in this fashion have been found in the past to be particularly useful with students in special education placements.

2. It was important to use a material that was not being currently used in the regular classrooms for two reasons: (a) it could provide a source of continuity across settings where otherwise different materials may be employed, and (b) any gains on these measures which were observed could not so easily be interpreted as having been learned in the students' regular reading program since, ostensibly, other materials were being employed outside the tutoring intervention. One major difficulty foreseen in the use of reading as a subject area, even though it has great content validity, was the fact that much reading instruction was concurrently taking place in the classroom; therefore, it was thought that a material not directly related to classroom instruction would facilitate the evaluation of tutoring effects.

In spite of the overall acceptability of the Harrison materials, one major problem remained. The Harrison materials as published were intended for use for the adult or parent tutoring a younger child and, therefore, had many notes, comments, and directions to the tutor interspersed throughout the materials. Learning disabled and behaviorally disordered elementary-age students could not be expected to be able to read and react to these directions, and there was some concern that the superfluous material might act as a distracting influence on students already known for exhibiting distractibility (Hallahan & Reeve, 1980). In addition, since it had been determined that students would be pre-taught on tutoring skills using simple instructional sequences, the simplest presentation method possible would be the best. Therefore, Beginning Reading I and Beginning Reading II were redesigned by the investigators to exclude all extraneous information and directions to the tutors, and to present as clear, simple and straightforward a procedure as the materials themselves would allow. This was relatively easily accomplished, and the result was a set of materials which followed clearly simple steps and lessons and which could easily be followed by learning disabled and behaviorally disordered students in tutoring settings.

Academic measures. Two basic measures were included to be used as evaluation procedures for the tutoring interventions. One measure was taken from the Von Harrison materials and was intended to be a direct criterion-referenced measure of the exact content taught in the tutoring program. The other measure was a more general norm-referenced instrument expected to test for generalized gains of the tutoring program to a more global measure of reading competence. Although the most direct measure of the ability of students to tutor each other would be the criterion-referenced measure, an additional measure of the ability of students to apply such information from these materials to more general reading tasks was also employed.

The criterion test was taken directly from Von Harrison's materials and consisted of a set of tests of consonants, vowels, digraphs, basic sight words, decoding, and two tests of sight words. These words were taken from the criterion-referenced test for the Reading I book. Students involved in

Reading II would be administered a diagnostic test relevant to the second book which also included a test of letter-sounds, basic sight words, and two parts decoding, phonetic skills, modified vowels, word segments, and sight words. These tests were not exhaustive with respect to all the material covered by the tutors, but they were representative of the type of material being covered in the reading program. The norm-referenced test chosen was the Woodcock-Johnson Psycho-Educational Battery and was chosen for several reasons: (a) it was an individually administered test which would serve to minimize error variance, and (b) it did allow a direct assessment of reading competence in each of three areas: sight word reading, word attack skills, and reading comprehension assessed via cloze passages. This measure has been assessed to have high reliability and validity. In addition, it is relatively simple to use and has a carefully standardized procedure which would help reduce variance across different administrators(see Appendix I).

Attitude measures. The Coopersmith Self-Esteem Inventory (Coopersmith, 1958) was chosen to be used as a measure of self-esteem for this particular project. The Coopersmith Inventory has in the past generated adequate reliability and validity and does provide for measures of attitudes towards self, home, and school. These are reflected in questions contained within the measure which allow for test comparisons. The Coopersmith has often been used as a dependent measure in tutoring interventions (Cohen, Kulik, & Kulik, 1981), although benefits as measured by the Coopersmith Inventory have been equivocal in tutoring programs. In addition, an Inferred Self-Concept Inventory was given to the participating teachers to fill out pre- and post on the students' inferred measure of the teacher's perception of the student's perception of himself and consisted of several statements followed by a Likert rating scale (see Appendix R).

Procedure

Project personnel met with the students involved in the pilot study individually, administered the pre-tests, and introduced them to the tutoring process. After the pre-tests had been administered and some rapport established between the student and the investigator, basic rules for tutoring were outlined:

1. Sit next to, rather than across from, the student you are tutoring.
2. Remember to give positive feedback and praise as often as possible, and never criticize or ridicule the other student's performance.
3. Be certain that the student has mastered the material in each step before proceeding to the next step.
4. When a student does make an error, correct him or her immediately and ask that the student read the word or words correctly immediately following the correction by the tutor.

After the basic rules for tutoring had been outlined to the student, the investigator and the student role-played a tutoring situation in which the investigator was the tutor and the student the tutee. Following several minutes of this, in which the student declared that he understood the situation, the roles were reversed, and the student was asked to be the tutor. By this method, models for prompting, correcting, modeling and praising student responses were given to the student, and he/she immediately was able to practice them. Finally, when the student had exhibited to the satisfaction of the investigator competence as a tutor, he was asked to tutor with the other student under observation of the investigator. After four weeks of daily intervention which took place for a period of 1/2 hour, and was implemented with each student acting as tutor for half of the period, students were both post-tested on the criterion measures. Results of the post-tests are difficult to interpret unequivocally due to the lack of a comparison group and the fact that some ongoing reading instruction by the resource teacher may have influenced the posttest score. It can be stated, however, that substantial progress was documented between pre- and post-testing on the criterion measure, and it is thought that much of this progress was due to the tutoring intervention. Improvements on various subtests of the criterion measure were noted as ranging from 10% to 73% with no decrease found on any posttest measure. In fact, on the level I posttest, both students scored close to ceiling levels. It was noted that the attitude measures were not sensitive enough to pick up adequately the students' attitudes, and a ceiling effect was anticipated. All four students responded extremely positively on the Coopersmith Self-Esteem Scale.

As stated previously, it is not known for certain whether all of the observed gains on the criterion measures were due to the tutoring intervention. However, considering the fact that the tutoring materials were different from the classroom materials, that the tutoring intervention was of relatively short duration, and that similar gains have been observed in other pilot investigations, it was felt that peer tutoring as employed in this instance has provided a strong supplement to the students' educational program.

Implications

The implications of the pilot investigation indicated to the investigators that the tutoring intervention as designed was a viable one with which to investigate a larger sample of students under appropriate controls. It was reported by the teachers that they thought up to three pairs of students could be involved in a tutoring project at one time without unduly disturbing the classes. The pre-post gain scores were encouraging to the investigators and indicated that handicapped students could be effective teachers of each other with respect to critical reading skills. The Woodcock-Johnson Test was not used as a posttest because of the general nature of the test and the tutoring project being so short, but the measure was considered adequate because of the performance levels of the students and the fact that strong reliability and validity had previously been established on this test. It was determined, however, to not use the Coopersmith Self-Esteem Scale because (a) many of the questions did not directly reflect on any attitudes or behaviors which were likely to be affected by tutoring interventions (i.e., "My mother yells at me at home"). It was decided, then, to use a different measure of attitude in the experimental study. For this meausre, the investigators chose the Attitude Towards Self, School, and Reading Measure developed by Marascuilo and Levin (1968). This test directly assesses attitudes of direct bearing to elementary-age students and for which the potential for tutoring to modify the attitudes scale was thought possible. This measure has good reliability and has been seen to significantly discriminate between good and poor readers (Marascuilo & Levin, 1968, see Appendix S).

Experimental Study

Subjects

Subjects for the larger experimental study were 30 elementary-age learning and/or behaviorally disordered students attending five different elementary schools in the Cache Valley public school system. Participating teachers in the Cache District were asked to identify pairs of students who would be appropriate for the peer tutoring intervention (i.e., for each pair, teachers were asked to select students who would get along well, read at about the same level while being in the same grade level, and pairs of students who would not present substantial scheduling difficulties). In this manner, a total of 16 learning disabled and behaviorally disordered children were identified for tutors and tutees in the experimental group. In addition, 16 children were selected for use as control students. These students were taken from the same settings, same schools, and same teachers as the experimental students, with the only exception being either scheduling or matching difficulties preventing them from easily being integrated into the tutoring program. This sample of 30 elementary-age students included 11 second-grade students, 8 third-grade students, 4 fourth-grade students, and 7 fifth-grade students. Average reading percentile assessed by the Woodcock-Johnson pre-test was 19. In addition, all students had been officially classified by the school district as learning disabled and behaviorally disordered according to Public Law 94-142 and local school district criteria.

Materials

Tutoring materials. Tutoring materials were the same as employed in the pilot investigation. Four books were compiled which were modified from the two Beginning Reading books by Harrison (1979). The first two books represented the content taught in Beginning Reading I, while the third and fourth tutoring books represented the first and second half of Beginning Reading II (see Appendices M and R).

Academic measures. The criterion tests from the Harrison materials were again employed as pre- and post-measures of direct reading skills being taught in the tutoring setting. In addition, probe sheets were developed based upon 100 randomly selected words covered during each reading book. These probes were expected to be used as continuous measurement to document progress which may have occurred in reading skills during the course of the program. Although it was thought that the criterion tests were good pre- and post-measures, it was also felt that an adaptation of these criterion tests administered as one-minute timings at frequent intervals would give a good indication of ongoing progress which may have occurred during the tutoring intervention. Copies of the probes used and criterion tests are given in Appendix T. Three separate versions of each probe were developed so that students would not simply be able to memorize the order of the words in each probe. Finally, the three reading subtests for the Woodcock-Johnson Psycho-Educational Battery were administered as pre-post measures: Word attack, sight word reading, and reading comprehension (see Appendix I).

Attitude measures. The Attitude Towards School Measures developed by Marascuilo and Levin (1968) were employed as measures of attitude change for the experimental study. An example of this measure is given in Appendix S.

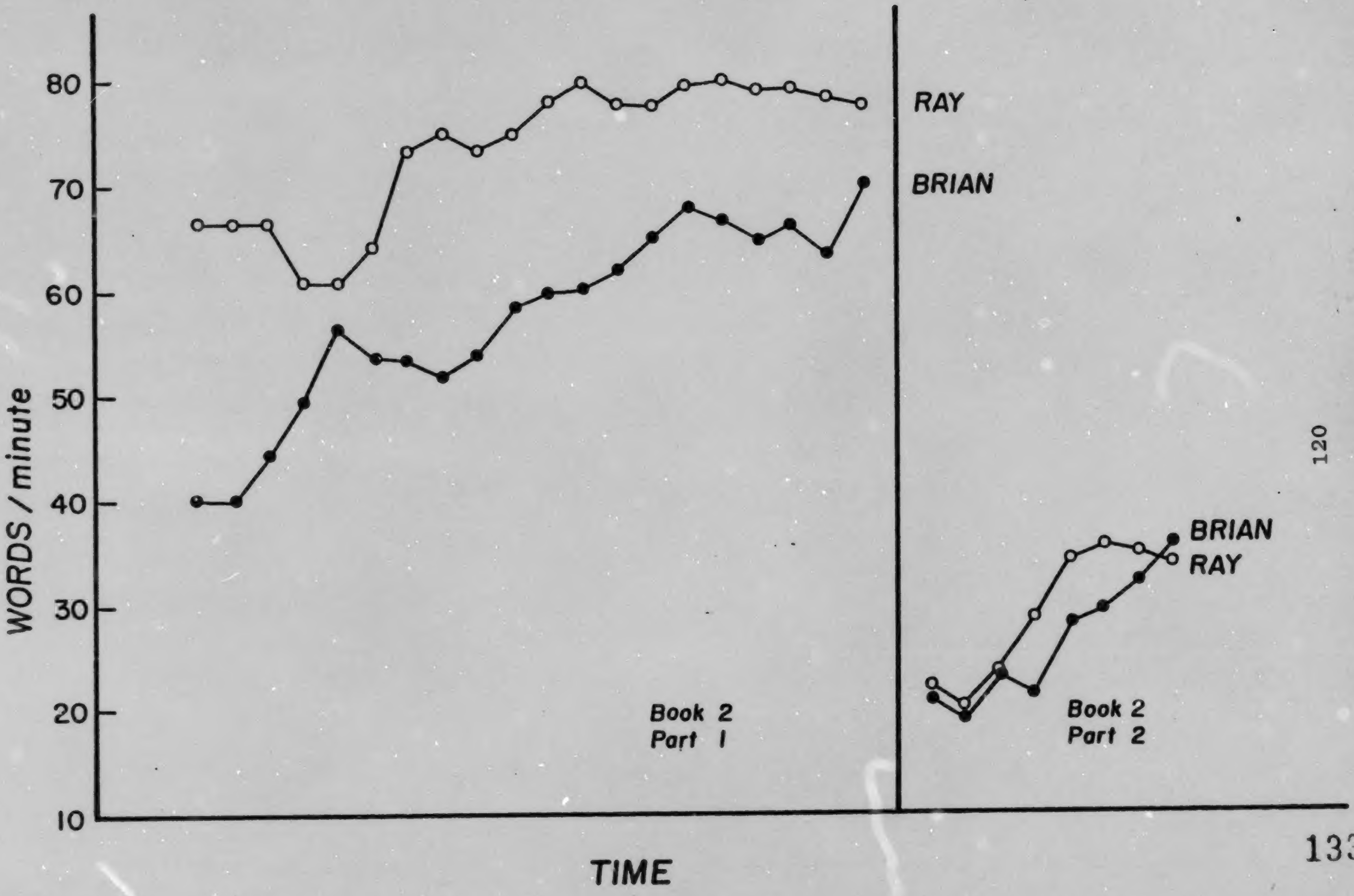
Procedure

The total peer tutoring intervention lasted on the average 10 weeks including one week of pretesting and tutoring instructions, eight weeks of direct tutoring, and one week of posttesting and feedback. First, all experimental and control subjects were administered all the measures described above. Then, students identified as peer tutors were met with individually by project staff and introduced to the methods of structured tutoring as outlined in the pilot study. It was not intended that even a one- or two-meeting orientation with supervised practice would be sufficient to completely teach all that was needed to learn about tutoring. It was felt, however, that the best exercise was tutoring itself. Therefore, the tutoring started soon after general instruction with the assumption that corrective feedback along the way in the best practices of tutoring would be most helpful. Although the amount of time spent for most tutoring sessions remained the same across the district at 30 minutes per session, the number of sessions per week varied considerably. Therefore, six experimental students were involved in tutoring intervention five days a week, four experimental students were involved in tutoring four days a week, and six experimental students were involved in tutoring only two days a week. The tutoring occurred during the spring semester of the school year, and each session was directly supervised by project staff who, without actually delivering the lessons, were available when students had questions about a word or to deliver corrective feedback on tutoring procedures. At regular intervals, tutors and tutees were administered one-minute timings on the criterion probes, and numbers correct were recorded for each student. Small stickers were used to support good performance by the tutors. At the end of the eight weeks of direct tutoring sessions, students were met with individually, given all posttest measures, given feedback on the tutoring, and administered a questionnaire regarding their own feelings about tutoring. This questionnaire is included in Appendix U .

Results

Results on academic measures. Number of words read per minute on the probes administered for formative evaluation were listed in tabular form. Different forms of these probes were employed to prevent students from memorizing word order. Because the different forms of the probe represented doubtless differentially difficult items for each student, depending upon which words were presented first versus last on the list, data are presented in graphic form as a moving average (N = 3). In other words, each data point on the following charts indicates the score on a given day weighted with the score of the previous assessment plus the following assessment. This method of moving averages does not allow a precise assessment of day-to-day functioning, but does remove much of the observed variability due to different forms. As can be seen in the charts below, substantial progress as assessed by these measures was observed on virtually all pairs of students. Also interesting to note, when tutoring pairs data are presented together, is that the slopes of acquisition of reading skills seem to parallel each other very closely. Although these are not single-subject charts in a purely experimental sense (i.e., no baseline measures were taken, and reversal or alternate treatment measures were not administered), it still seems quite possible from these measures to infer that handicapped students can, in fact, tutor each other in critical reading skills and learn from each other in this manner. On the one chart in which it seems that very little, if any, progress on these particular probes were made (Figure 2), it must be noted that these students were involved in the intervention of the very least intensity, i.e., two days a week, 15 minutes per day. From the data on this chart, it does seem to appear that tutoring sessions of this level of frequency may not be optimal for facilitating reading skills in this population.

Data from pre- and post-measures are given in Table 1. On the criterion test, percentage of words correctly read was computed on pre- and posttest scores. The pretest score was subtracted from the posttest score, and a new variable, gain score on a diagnostic measure, was developed.


80
70
60
50
40
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WORDS / minute
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Book 2
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Figure I.

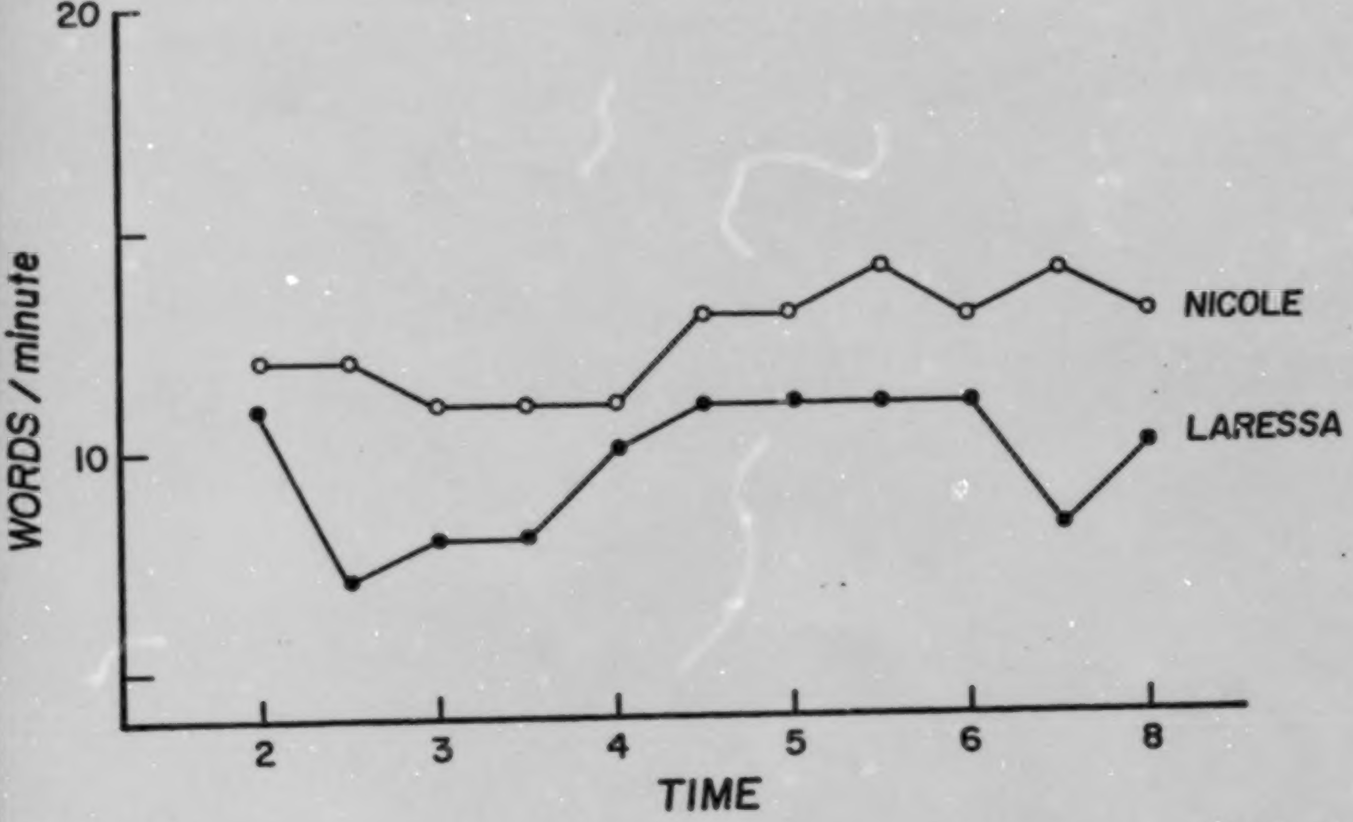

Figure 2.

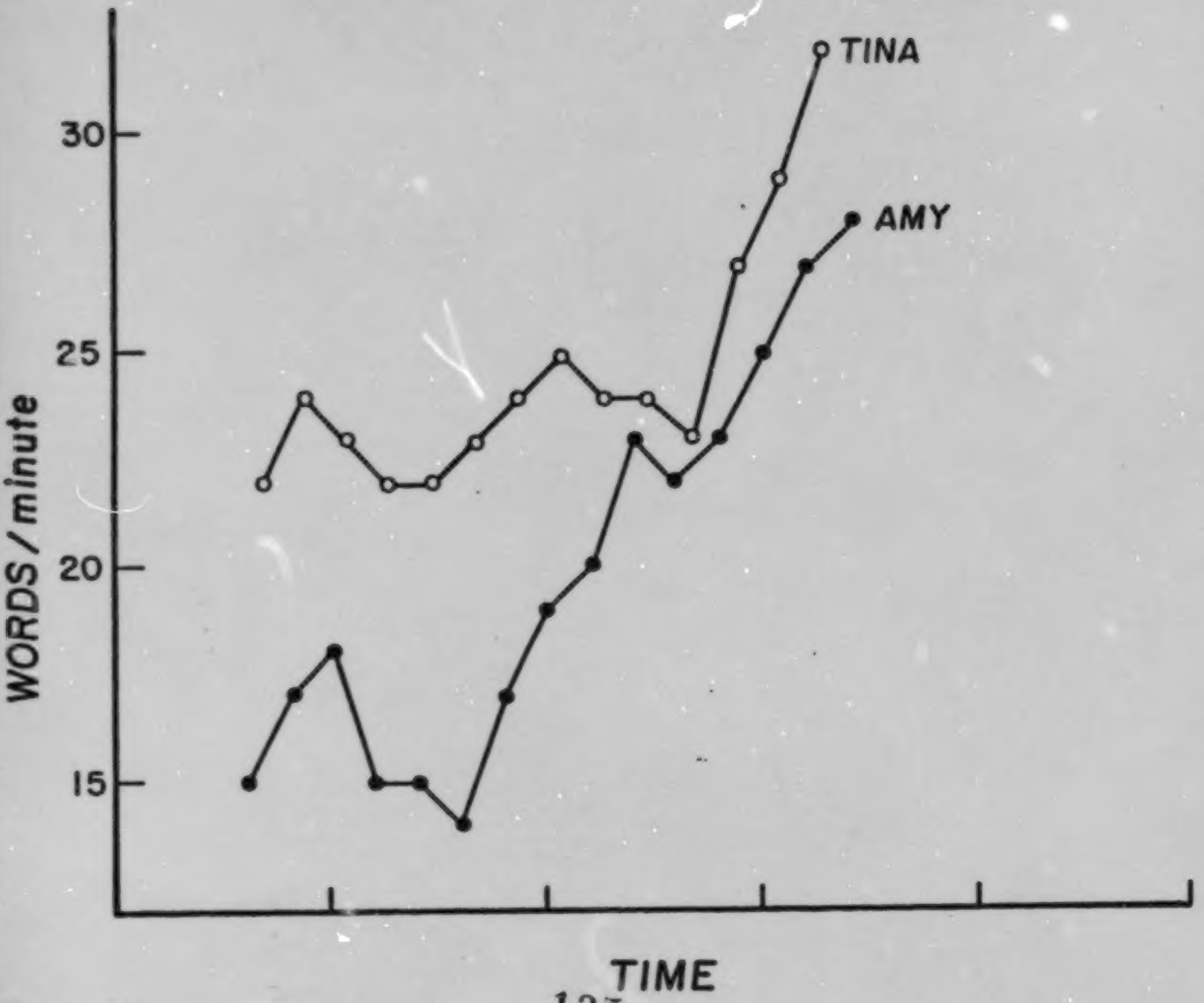

Figure 3.

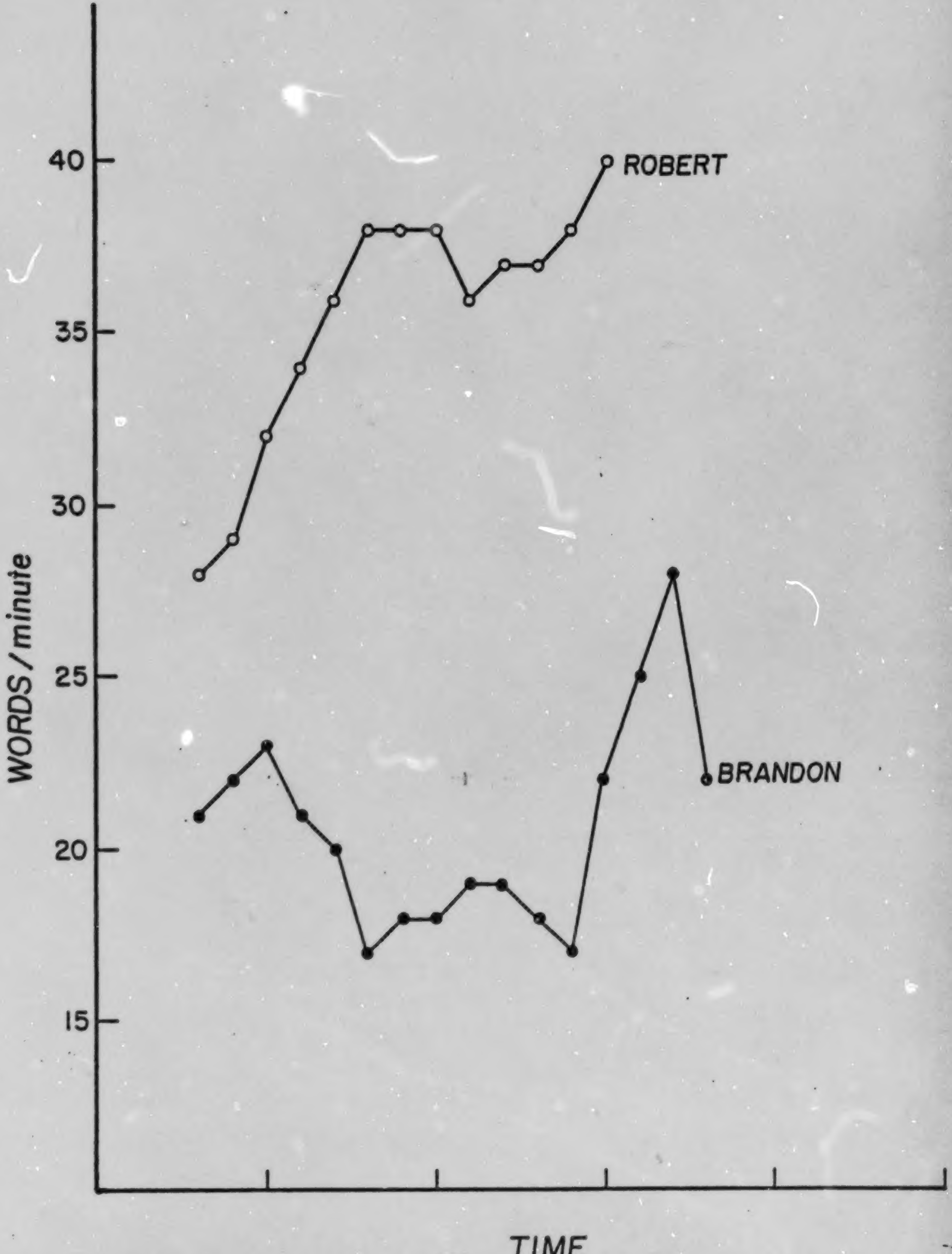

Figure 4:

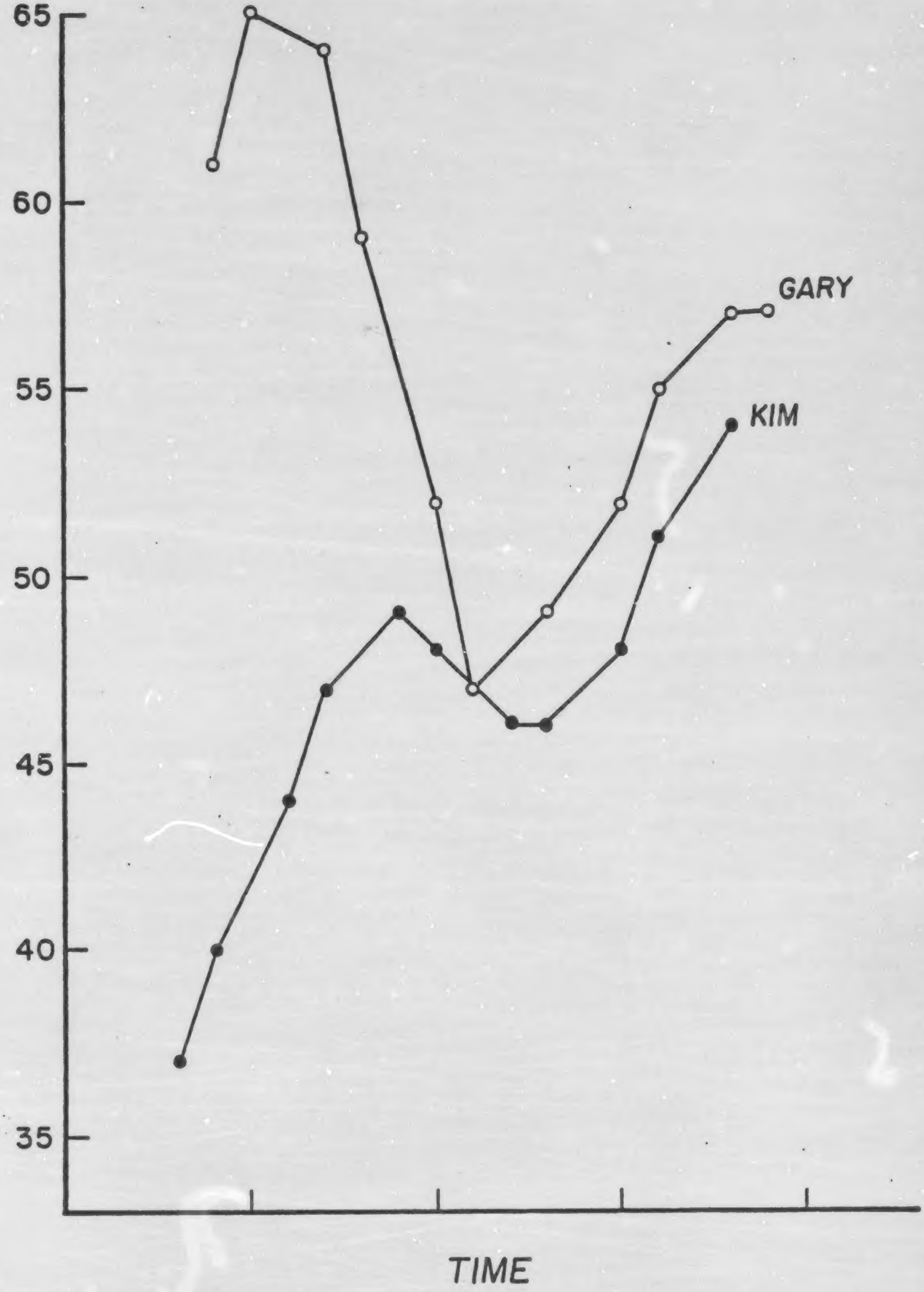

Figure 5.

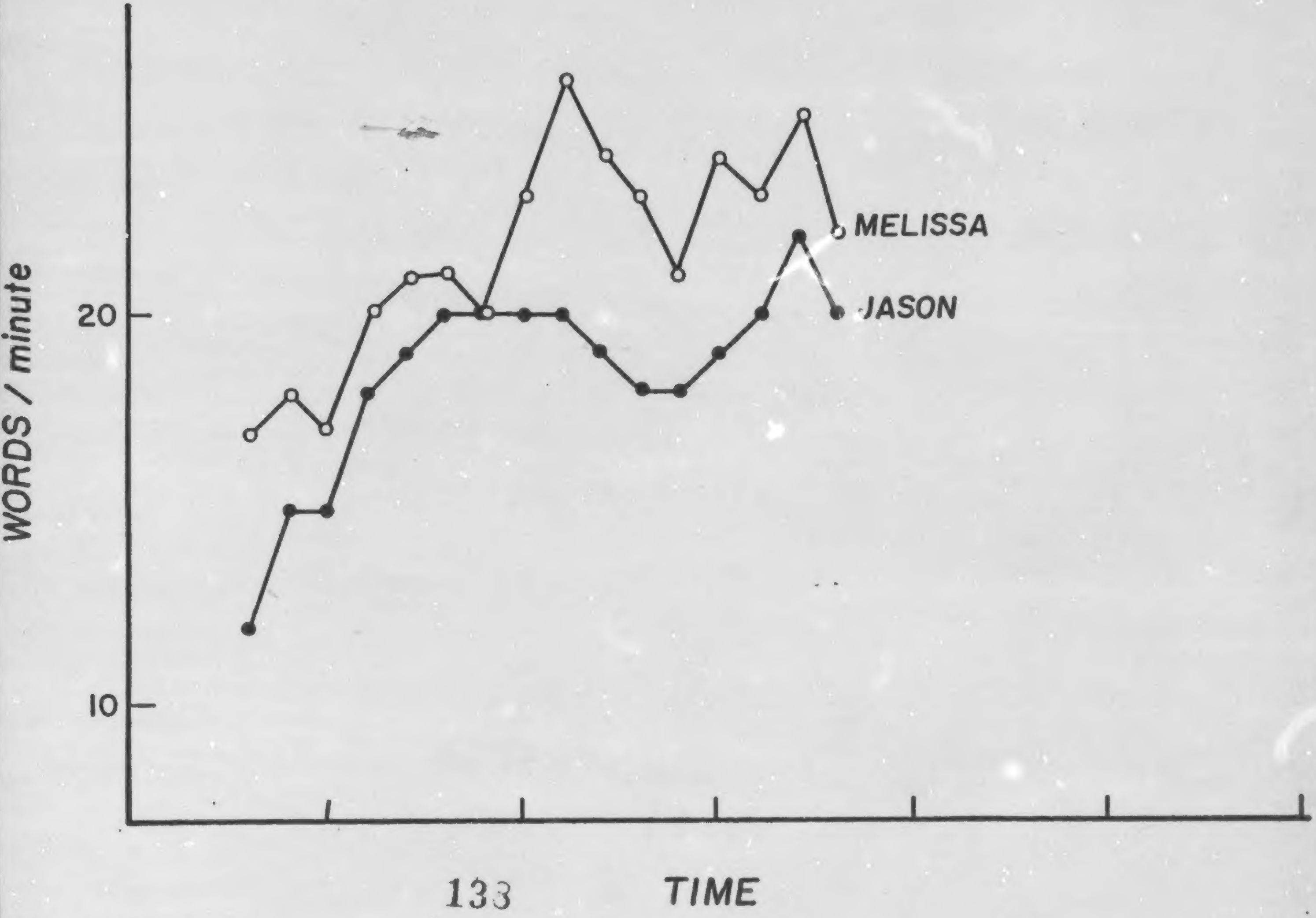

Figure 6.

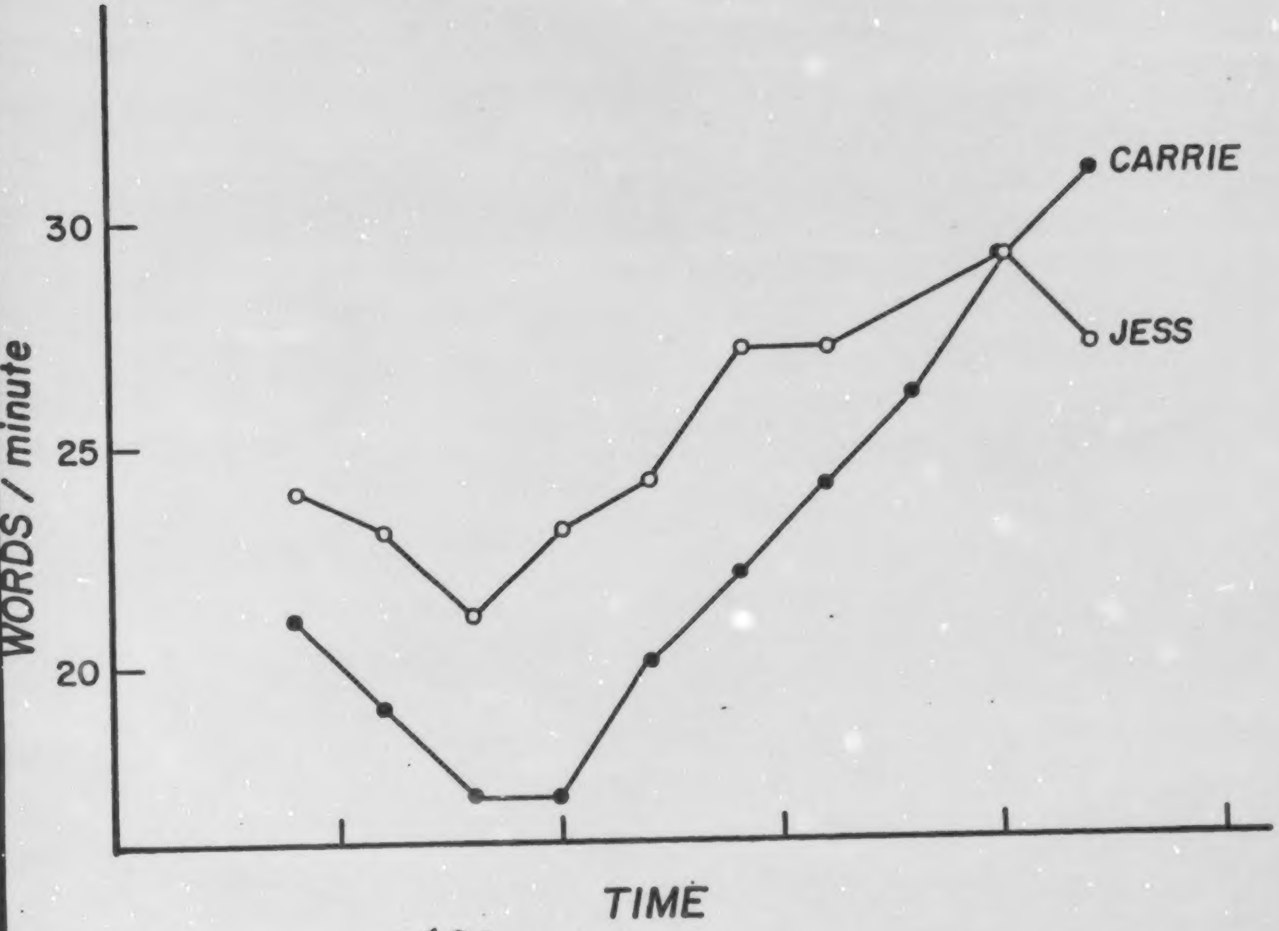

Figure 7.

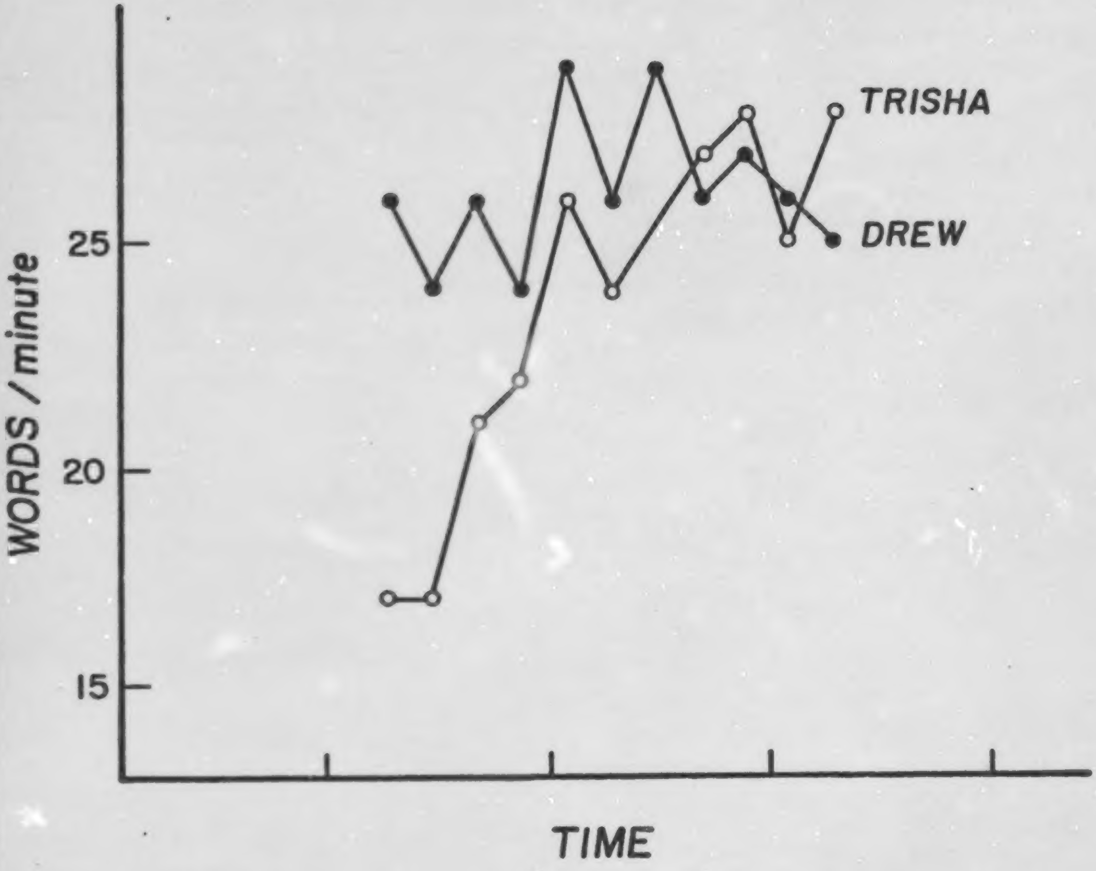

Figure 8.

TABLE ONE

CACHE DISTRICT RESULTS

		PRE		POST		PERCENT GAIN		POST	EFFECT
	N	$\bar{x}$	(SD)	$\bar{x}$	(SD)	$\bar{x}$	(SD)	ADJ. $\bar{x}$	SIZE$^+$
Letter Sounds - Test 1									
E	13	27.92	(1.71)	29.23	(1.30)	.04	(.05)	29.82	.82*
C	10	27.40	(1.35)	27.80	(2.44)	.01	(.11)	27.82	
Sight Words - Test 1									
E	13	77.15	(19.58)	86.23	(16.41)	.08	(.09)	91.51	.30
C	10	87.40	(25.18)	90.40	(20.39)	.03	(.09)	85.31	
Decoding Nonsense Words - Test 1									
E	13	12.23	(8.76)	18.23	(9.28)	.19*	(.22)	21.41	.97*
C	10	21.20	(5.41)	15.20	(9.73)	-.19	(.29)	12.02	
Sight Words - Test 2									
E	2	105.00	(7.07)	117.00	(2.83)	.09	(.07)	120.10	.93
C	4	117.00	(6.48)	117.00	(6.68)	.00	(.03)	113.90	
Decoding Nonsense Words - Test 2									
E	2	22.00	(9.90)	27.00	(7.07)	.10	(.06)	28.63	.32
C	4	25.50	(12.50)	26.25	(12.42)	.01	(.05)	24.63	
Overall Gain on Diagnostic Tests 1 & 2		-		-					
E	15					.10*	(.07)		1.18*
C	15					-.03	(.11)		
Overall Gain on All Decoding Subtests - Tests 1 & 2		-		-					
E	15					.18*	(.21)		1.20*
C	15					-.12	(.25)		
Overall Gain on All Sight Words Subtests - Tests 1 & 2		-		-					
E	15					.08	(.09)		.86*
C	15					.02	(.07)		

		PRE		POST		GAIN		POST	EFFECT
	N	$\bar{x}$	(SD)	$\bar{x}$	(SD)	$\bar{x}$	(SD)	ADJ. $\bar{x}$	SIZE
WJ Letter/Word ID									
E	15	22.67	(3.72)	23.80	(4.46)	1.13	(2.17)	25.02	-.05
C	15	25.27	(4.61)	26.47	(5.08)	1.20	(3.21)	25.25	
WJ Word Attack									
E	15	7.93	(3.37)	10.07	(4.06)	2.13*	(2.88)	10.59	.19
C	15	9.00	(4.02)	10.20	(4.90)	1.20	(2.37)	9.67	
WJ Passage Comp.									
E	14	8.29	(3.41)	8.57	(2.95)	.29	(2.13)	8.97	-.36
C	15	9.40	(3.14)	10.53	(3.23)	1.13	(2.39)	10.14	
WJ Percentile Score									
E	14	15.86	(14.99)	15.79	(9.98)	-.07	(9.83)	17.18	-.16
C	15	20.93	(16.92)	20.87	(14.55)	-.07	(12.83)	19.47	
Attitudes									
E	15	27.73	(6.56)	29.00	(6.22)	1.27	(3.53)	30.18	-.15
C	13	31.62	(3.50)	32.07	(4.70)	.46	(6.28)	30.90	

$^+$Effect size computed by dividing the experimental-control difference by standard deviation of control group posttest.

*Statistically significant ($p < .05$) difference on adjusted means or pre-post gain.

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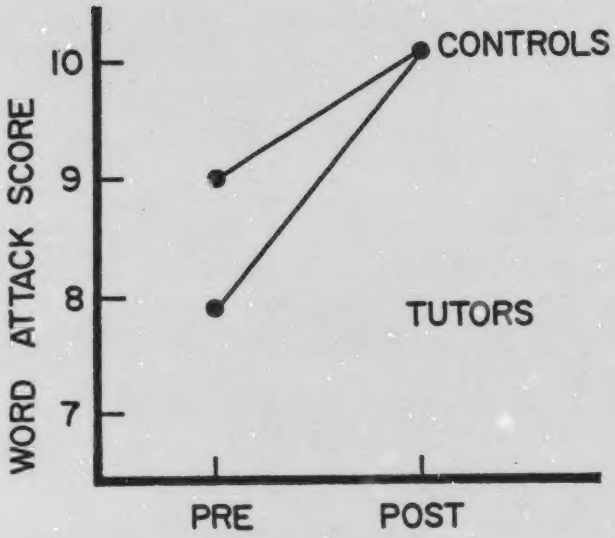

Figure 8a. Achievement gain on Woodcock-Johnson Decoding Subtest.

According to this measure, students in the experimental group gained an average of nearly 15% on the diagnostic measure (SD = .12), while the control group gained virtually none (3%, SD = .06). These differences in gain scores were highly significant, $p < .003$. In addition, the experimental group gained 2.1 words on the word attack subtest of the Woodcock-Johnson, while the control group gained only 1.2 during the same time period. This increase was highly statistically significant for the experimental group ($t = 2.87$, $p < .01$), but only approached significance for the control group ($t = 1.96$, $p < .07$).

Social measures. The teacher survey results were completely positive in that all teachers involved (7) thought tutoring was a good idea in special education, thought the students benefited from this project, and believed that tutoring could help improve social skills. Although two teachers thought the tutoring materials employed were somewhat limited in that they may have represented an interest level lower than the age of the students, all teachers were in favor of tutoring interventions as applied in special education and suggested several other interventions including math, spelling, and writing. All students reported enjoying the intervention, and thought that it was a good thing to do in school. Two children reported some social difficulty with their particular tutoring companion.

Effects of tutoring on student attitude were nonsignificant, with students in both experimental and control groups reporting highly positive attitudes in personal, school, and reading areas.

Results and Discussion

Information from the individual progress charts as well as the strong pre-post differences on the criterion measure and the significant gains in word attack on the Woodcock-Johnson strongly suggest that learning disabled and behaviorally disordered students are able to teach each other in peer tutoring settings and learn critical reading skills via this type of structured tutoring. The gain scores were considered to be particularly strong, considering several of the tutor pairs were not involved as often as the project thought optimal. It must also be mentioned that the students involved in peer tutoring were not taken away from their regular resource room or self-contained direct instructional time, but were involved in instructional activities supplementary to the reading programs they were already receiving. Since scheduling these pairs of students across a wide variety of settings was a complex task, it is not possible to specify exactly the activities of the control students. Indeed, this would be impossible to assess as experimental students tutoring was undertaken at differing times from early in the morning until late in the afternoon, depending upon the school and the tutoring pair. It was known, however, that control students received an equal amount of time in resource and self-contained settings and that it is highly unlikely that tutoring students received any additional allocated time for the task of reading. In fact, the control activities most commonly replaced by the tutoring intervention were individual seatwork or teacher-led instruction. To this extent, then, it can be seen that the tutoring gains were quite strong and represented a positive alternative to alternate activities of special education students when not engaged directly by the teacher in one-to-one teaching or small-group instruction. This information is considered to be of substantial interest, because commonly, teachers in resource or self-contained settings do not have time or scheduling convenience to be completely on-task with all students at all times. This type of peer tutoring, then, apparently can meet the needs of teachers to (a) provide students with additional practice activities in a structured setting, and (b) provide a method for monitoring their activities without being in direct contact with them.

One difficulty in interpreting the present results as completely generalizable was the fact that project personnel from outside the classroom supervised the tutoring, rather than the teacher. This was done for two reasons: First, to provide additional assistance to teachers whose schedules were already demanding, and secondly, to monitor the tutoring sessions in a fashion which will be consistent across the many different school settings utilized by the investigators. To this extent, and particularly in the schools in which only one pair of students may have been involved in tutoring at one time, the supervision may have been more intense than could be reasonably expected were these interventions applied directly in special education settings. It was demonstrated in the study, however, that one individual who could have been a teacher's aide, could monitor as many as three pairs of students at one time, and that monitoring even one pair of students could provide those students an opportunity to practice positive social responses in addition to the regular reading skills. It must also be mentioned that in an informal sense, much off-task behavior was observed in several tutoring pairs, particularly ones below fourth-grade level, and that the level of social maturity necessary for effective tutoring performance is something which needs to be investigated by researchers and individual teachers in designing and implementing these tutoring programs. However, it was observed that although in some settings, on-task behavior and appropriate responses were less than might have been considered optimally desirable, an examination of individual progress charts indicates that virtually all students, in fact, gained reading competence from the intervention. This assertion is also supported by the fact that all students indicated gain on the pre- and post measures.

That the students did not show significantly different gains on the Woodcock-Johnson Total Reading Score is disappointing, but not particularly surprising. First, the major question in hand was whether handicapped students in same-age peer tutoring situations could be successful in teaching critical reading skills at all, and to this extent, the project was quite successful. The issue of whether generalized reading gain, as measured on a norm-referenced test, was made is vulnerable to two specific threats: (a) students in control group conditions were also receiving a similar, if not equivalent, amount of reading instruction in other content areas which could also be expected to transfer to the norm-referenced measure, and (b) the issue of whether the result of a tutoring program resulted in general gains on an overall reading achievement test is more an issue of generalizability than specific training in and specific assessment of the tutoring process. That is, did the knowledge acquired through the tutoring process and demonstrated to have been acquired through this process generalize to another reading task? This question is somewhat removed from the question of whether students can, in fact, impart critical reading skills to each other even though they are at a similarly low level of reading themselves. To this extent, the outcome was uncertain and can hardly be dismissed as an intervention because of this lack of gain over an eight-week and sometimes very short-term program. It was noted, however, that the experimental group gains in the word-attack subtest did, in fact, surpass those of the control group. Coupled with the significant results of the criterion test and the individual progress charts, this does lend weight to the assertion that, in fact, many of the skills did generalize to the norm-referenced measure.

The fact that students did not score differently on the measures of attitudes was also not surprising for two reasons:

(1) All students at pretest were seen to have extremely positive attitudes which they expressed toward themselves, their schools, and reading content areas. These attitudes were positive irrespective of level of reading proficiency, which in all cases, could be assumed to be low. These positive attitudes, then, probably reflect the high level of community organization and parental involvement found in schools in the Cache District and are probably reflective of this fact more than others. Although the attitudes of handicapped students toward themselves have traditionally been reported as being low, it is clear from this investigation that this need not be a blanket assumption of all special education children. In fact, the results of this particular investigation indicate that in some cases, at least, attitudes of mildly handicapped students can be quite high.

(2) It is also likely that, given the nature of the peer tutoring intervention in which neither student is clearly "in charge" and both students were of similar age and ability levels, positive changes in attitude were less likely to result than in other configurations.

In summary, therefore, this tutoring project can generally be stated to have been a highly successful one. Learning disabled and behaviorally disordered students were able to successfully tutor each other as peers and gain critical reading skills in the process. These gains were significantly greater than those made by control students. The gains made by students in word attack skills as measured by a norm-referenced test were significant, while the same was not true of controls over the same time period. Although gains made by students acting as both tutors and tutees were strong, no apparent benefit to student attitude was observed. This lack of improvement in attitude may have been a function of the particular nature of the intervention or the fact that general attitudes on the part of this particular population were already quite high.

EXPERIMENT 4

LEARNING DISABLED AND BEHAVIORALLY DISORDERED STUDENTS AS CROSS-AGE TUTORS

The objective of this particular investigation was to determine whether older handicapped students could effectively tutor younger handicapped students in the area of reading. Outcomes investigated in this study included the same as those in Experiment 3: academic functioning and social/emotional functioning, as measured by attitudes toward self, school, and reading. In this investigation, tutors were chosen to be different in age and ability level, with a clearly defined tutor functioning well above the reading level of the tutee. Although handicapped students have often been employed as tutees in investigations such as this (Jenkins, Mayhall, Peschka, & Jenkins, 1978), researchers have rarely addressed the use of learning disabled or behaviorally disordered students as tutors tutoring other handicapped students (see literature review in Appendix Q). The benefits of cross-age tutoring in special education settings was expected to be that (a) one member of the tutoring pair would be expected to have mastery of the material being tutored and, therefore, could be expected to be quite effective in delivering corrective feedback without a great deal of supervision, and (b) since previous researchers such as Allen (1976) indicated that one benefit of tutoring may be the fact that the younger tutee may look up to the older tutor, this affective benefit would be potentially obtainable in a cross-age tutoring setting. To this extent, cross-age tutoring in special education settings could be regarded as potentially a very effective way of supplementing direct individual teacher-led instruction in the classroom. Although the use of cross-age tutors was thought to be beneficial in the above ways, several drawbacks were hypothesized at the beginning of this project. These potential drawbacks included the following: (a) only one student of each tutoring pair would ostensibly be directly working on material at an optimal academic level, and (b) since resource rooms tend to schedule around ability groupings, scheduling of this type of tutoring intervention may present problems. If, in fact, it could not be demonstrated that the tutor had also benefited on reading measures, then the use of the tutor's time would be difficult to justify, particularly since the tutors themselves in the present instance would be greatly in need of reading instruction. In addition, if scheduling of students at different ability levels to be in the resource setting at the same time presented great difficulties, this type of cross-age tutoring may not be feasible even if the benefits could be demonstrated. It can then be concluded that, although the cross-age tutoring intervention addressed some of the problems particularly hypothesized for the peer tutoring, (i.e., more controlled monitoring of behavior by the tutor and better corrective feedback), it also brought with it additional problems with respect to scheduling and potential benefits.

Outcome of the cross-age tutoring intervention, therefore, was far from a foregone conclusion. Literature searches conducted by the present investigators failed to shed light on the particular issues of importance to utilization of cross-age tutors in tutoring interventions in special education. In addition, similar problems for the use of appropriate academic and social measures as Experiment 3 were also evident. For this reason, a pilot investigation similar to that employed in Experiment 3 was conceptualized and conducted. The pilot investigation paralleled the pilot investigation in Experiment 3 and intended to provide information concerning the potential of this type of tutoring intervention and the potential of the proposed measurement devices to uncover gains made by this intervention.

Pilot Investigation

Subjects

Subjects were six elementary-age students involved in three tutoring dyads from one school in Logan School District. These six students represented grade levels 2 through 5 and had all been identified as learning disabled by Public Law 94-142 and local school district criteria which included a 40% discrepancy between actual performance and ability in each of at least two specific academic content areas. In addition, one of the six students had additionally been referred for behavior problems. These three pairs had been recommended by the resource teacher in this particular school as having potential for benefiting from a tutoring intervention. Three of the subjects were boys and three were girls. One tutoring pair was composed of two girls, one was composed of a girl tutoring a boy, and one pair was composed of one boy tutoring one girl.

Materials

Tutoring materials. Materials to be chosen for use during the pilot investigation were the same as those in Experiment 3: Grant Von Harrison's "Beginning Reading Materials" (1979). These materials had been previously selected as effective in meeting the requirements of "structured tutoring" (Harrison, 1976) and had been thought to be of potential for being effective as high as that in Experiment 3. Again, these materials were chosen because they followed specific sequenced skills that could be easily utilized by students with learning disabilities or behavior disorders, and they presented phonetically relevant information in a manner that has been found in the past to be particularly useful with students in special education placements. It was also important as in Experiment 3 to provide materials which would provide some continuity across schools and yet teach some specific skills not necessarily being covered by the regular teacher's regular materials. For this reason, it would be much easier to evaluate the effects of the tutoring materials per se and not effects of the general reading program in the particular school. These materials, as in Experiment 3, were also edited to remove extraneous notes, comments, and directions to the tutor which were interspersed throughout the materials. Although it was thought that the tutors would be on a higher level of reading and maturity than the tutees, it was also felt that their level was not necessarily high enough to benefit from the written feedback and directions provided throughout the tutoring materials, and that, in fact, these directions may provide a source of distraction to the tutors. The resulting materials, then, followed clear and simple steps, and lessons were easily utilized by learning disabled and behaviorally disordered students as tutors in tutoring settings (see Appendices M and R).

Academic measures. The two measures included for use as evaluation procedures for the tutoring interventions were the same as those used in Experiment 3: that is, a criterion-referenced measure of the exact content being taught in either beginning reading level 1 or beginning reading level 2 materials. Although again this would provide the most direct measure of the ability of students to tutor other students in these particular skills; however, an additional measure of the ability of students to apply such information from the materials to more general reading tasks was also employed, in the Woodcock-Johnson Psycho-Educational Battery, Reading subtests. These were also considered important materials to use in this particular investigation because the tutors themselves may have been assessed on a higher level of the criterion measures than the actual materials they were tutoring on, and evaluation of tutor gain in this case would be considered to be more complex. It was thought that the use of the Woodcock-Johnson in this case would assist in making evaluations of any tutor gains which might be seen in reading (see Appendix I).

Attitude measures. Again, the Coopersmith Self-Esteem Inventory was chosen to be used as a measure of self-esteem for this particular project. The Coopersmith Inventory has, as mentioned before, in the past generated adequate reliability and validity and did provide for measures of attitude towards self, home, and school.

Procedure

Project personnel met with the students involved in the pilot study individually, administered the pretests, and introduced them to the tutoring process. After the pretests had been administered and some rapport established between the students and the investigators, investigators met with individual tutors and outlined basic rules for tutoring which were the same as Experiment 3.

1. Sit next to, rather than across from, the student you are tutoring.
2. Remember to give positive feedback and praise as often as possible, and never criticize or ridicule the other student's performance.
3. Be certain that the student has mastered the material in each step before proceeding to the next step.

4. When a student does make an error, correct him or her immediately and ask that the student read the word or words correctly immediately following the correction by the tutor.

In addition to the above four rules, which were the same as those delivered to students in Experiment 3, students in this investigation were informed that some students may make progress slowly and that the tutor should be particularly certain to exhibit patience and not to expect the student to make strong gains in very short periods of time. The importance of the student's role as tutor was also emphasized to the student, and the importance of his role in making important changes in the tutee's academic functioning was also underlined.

After the basic rules for tutoring had been outlind to the student, the investigator and the student roleplayed a tutoring situation in which the investigator was the tutor and the student, the tutee. Following several minutes of this in which the student declared that he understood the situation, the roles were reversed, and the student was asked to be the tutor. By this method, model for prompting, correcting, modeling, and praising student responses were given to the student and he/she immediately was able to practice them. Finally, when the student had exhibited to the satisfaction of the investigator competence as a tutor, he was asked to tutor with the tutee who was brought in to be tutored under the observation of the investigator. When it appeared that the tutor exhibited appropriate behaviors to the tutoring situation, the tutoring intervention was implemented. These tutoring sessions were like those in Experiment 3 in that they took place for a 30-minute period, but were unlike those of Experiment 3 in that one student acted as a student for the entire 30 minutes. The pilot study was conducted in the Logan School District for a period of six weeks in addition to one week of pretesting and training and one week of follow-up. As in Experiment 3, results of the post-tests were difficult to interpret unequivocally due to the lack of a comparison group and the fact that some ongoing reading instruction by the resource teacher may have influenced post-test scores. As in Experiment 3, however, substantial progress was documented between pre- and post-test measures on the criterion measure, particularly on the part of the tutees, and it is thought that much of this progress was due to the tutoring intervention. Less progress was documented on the part of the tutors, although it must be acknowledged that tutors in most cases received a criterion measure different from that which they had been tutoring on and were clearly performing at ceiling levels. The attitude measures as reported on the Cooper-Smith Self-Esteem Inventory as in the pilot investigation of Experiment 3 were also found to be extremely positive and to reflect a potential for a ceiling effect in a larger study.

As stated previously, it was not known for certain whether the observed gains on the criterion measure were due to the tutoring intervention; however, considering the fact that tutoring materials were different from the classroom materials, the tutoring sessions were of relatively short duration, and that similar gains had been observed in other pilot investigations, it was felt that peer tutoring as employed in this instance has provided strong supplement to the students, particularly the tutees' educational program. The Woodcock-Johnson test, although it was determined to be acceptable for use as a pre-post measure, was not employed as a post-test measure because of the global nature of the assessment and the fact that only a few short weeks had passed between pre-testing.

Implications

Implications of this pilot investigation indicated to the investigators that the cross-age tutoring intervention as designed was also a viable one with which to investigate a larger sample of students under appropriate controls. The teacher reported being extremely positive about the tutoring intervention; in fact, was reluctant to discontinue the tutoring intervention at the end of the pilot study. This teacher felt that three pairs of students could easily be managed at one time without unduly disturbing the class. The pre-post gains were encouraging to the investigators and indicated that handicapped students could be effective teachers of younger handicapped students with respect to critical reading skills. It was determined also not to use the Cooper-Smith Self-Esteem Scale for the same reasons as those given in the pilot investigation of Experiment 3, that (a) many of the questions did not directly reflect attitudes or behaviors which were likely to be affected by tutoring, and (b) the very positive attitude approaching a ceiling effect were observed on this measure. It was decided to use a different measure of attitude in the experimental study. This measure was the scale developed by Marascuilo and Levin (1968) which was employed in the third experiment, peer tutoring, and has been demonstrated in the past to discriminate successfully between good and poor readers and to exhibit strong internal consistency and validity.

On of the basis of the pilot investigation it was found that with relatively small modifications, a larger experimental study could be involved. It was decided to proceed with the tutoring intervention as outlined, but to change only the attitude measure as described above (see Appendix S).

Experimental Study: Experiment 4

Subjects

Subjects for the larger experimental study were 47 elementary-age learning and/or behaviorally disordered students attending five different elementary schools in the Logan public school system. Participating teachers in the Logan District were asked to identify pairs of students who would be appropriate for cross-age tutoring interventions (i.e., for each pair, teachers were asked to select students who would get along well, read at a differing level with one student easily exhibiting mastery of content and to select pairs of students who would not present substantial scheduling difficulties. In this manner, a total of 27 learning disabled and behaviorally disordered children were identified for tutors and tutees in the experimental group. In addition, 20 children were selected for use as control students. These students were taken from identical settings in the identical schools and using the same resource and regular class teachers as those in the experimental schools, with the only exception being scheduling or matching difficulties preventing them from being easily integrated into the tutoring program. These 30 boys and 17 girls included 9 first grade students, 9 second grade students, 5 third grade students, 8 fourth grade students, 11 fifth grade students, and 5 sixth grade students. Average percentile reading level across all students as assessed by the Woodcock-Johnson Pretest was 23 (SD = 8.2). In addition, all students had been officially classified by the school district as learning disabled and behaviorally disordered according to Public Law 94-142 and local school district criteria, which, for the LD children, included a 40% discrepancy between achievement and ability.

Materials

Tutoring materials. Tutoring materials were the same as those employed in the pilot investigation. Four books were compiled which were modified from the two beginning books by Harrison (1979). The first two books presented the content taught in Beginning Reading I, while the third and fourth tutoring books represented the first and second half of Beginning Reading II (see Appendices M and R).

Academic measures. The criterion test from the Harrison materials were again employed as pre- and postmeasures of correct reading skills being taught in the tutoring setting. In addition, probe sheets were developed based upon 100 randomly selected words covered during each reading book, and used in the experimental study of Experiment 3. Three forms of probes for each book were used as continuous measurement to document progress which may have occurred in reading skills during the course of the program. Although it was thought that the criterion tests were good pre- and postmeasures by themselves, it was also felt than an annotation of these criterion tests administered as one-minute timings at frequent intervals would give a good indication of ongoing progress which may have occurred during the tutoring intervention. Copies of the probes and criterion tests are given in Appendix T. As can be seen, three separate versions of each probe were developed as in Experiment 3 so that the students would not simply be able to memorize the order of the words in each probe. Finally, the three reading subtests from the Woodcock-Johnson Psycho-Educational Battery were administered as pre-post measures of word attack, sight-word reading, and reading comprehension.

Attitude measures. The Attitude Toward School Measures developed by Mariscuilo and Levin (1968) were employed as measures of attitude change for the experimental study. (see Appendix S).

Procedure

The total peer tutoring intervention lasted 12 weeks, including one week of pretesting and tutoring instruction, ten weeks of direct tutoring, and one week of posttesting and feedback. First, all experimental and control students were administered all measures described above. Then, students identified as tutors were met with individually by project staff and introduced to the methods of structured tutoring as outlined in the pilot study. It was not intended that even a one- or two-meeting orientation with supervised practice would be sufficient to teach all there was to learn about tutoring. It was felt, however, that the best exercise was tutoring itself. Therefore, the tutoring started soon after general instruction with the assumption that corrective feedback along the way on the part of project personnel in the best practices of tutoring would be most helpful. Although the amount of time spent for tutoring sessions were made similar across the district at 30 minutes per session, the number of sessions per week varied considerably. Therefore, 6 experimental students were involved in tutoring interventions five days a week. Two were involved four days a week, and 19 were involved in tutoring two or three days a week. These tutoring sessions occurred during the spring semester of the school year, and each session was directly supervised by project staff who, without actually delivering reading lessons or content, were available when students had questions about a word or were available to deliver corrective feedback on tutoring procedures. At regular intervals, tutees were administered one-minute timings on the criterion probes, and numbers correct and errors were reported for each student. Since the tutors had already demonstrated mastery of the tutoring materials and it seemed inappropriate to probe on materials not being involved in the tutoring intervention, the tutee only in this case was given regular probes, and not the tutor. At the end of 10 weeks of direct tutoring sessions, students were met with individually, given all posttest measures, administered the questionnaire regarding their own feelings about tutoring, and given feedback on the tutoring project. A questionnaire was also given to the teachers involved in the tutoring project. Both questionnaires are included in Appendix U.

Results on academic measures. Number of words read correctly per minute and number of errors per minute on the probes were collected, and samples of these charts are given in the individual progress records which follow. Because the different forms of the probe represent doubtless differentially difficult items for each student, depending on which words were presented first versus last on the list, data are presented in graphic form as a moving average (N = 3), as in Experiment 3. In other words, each data point on the following charts indicates the score on a given day weighted with the score of the previous assessment plus the following assessment. In this manner, a smooth moving average was computed which provides a measure of progress unaffected by the fluctuations of different probes being used. As can be seen on the charts which follow, substantial progress as assessed by these measures was observed on all tutored students. Although, as in Experiment 3, these are not single-subject charts in a purely experimental sense and individual data points do not represent specific performance on specific days, it still seems quite possible from these measures to infer that handicapped students can in fact benefit strongly from other handicapped students tutoring them in critical reading skills.

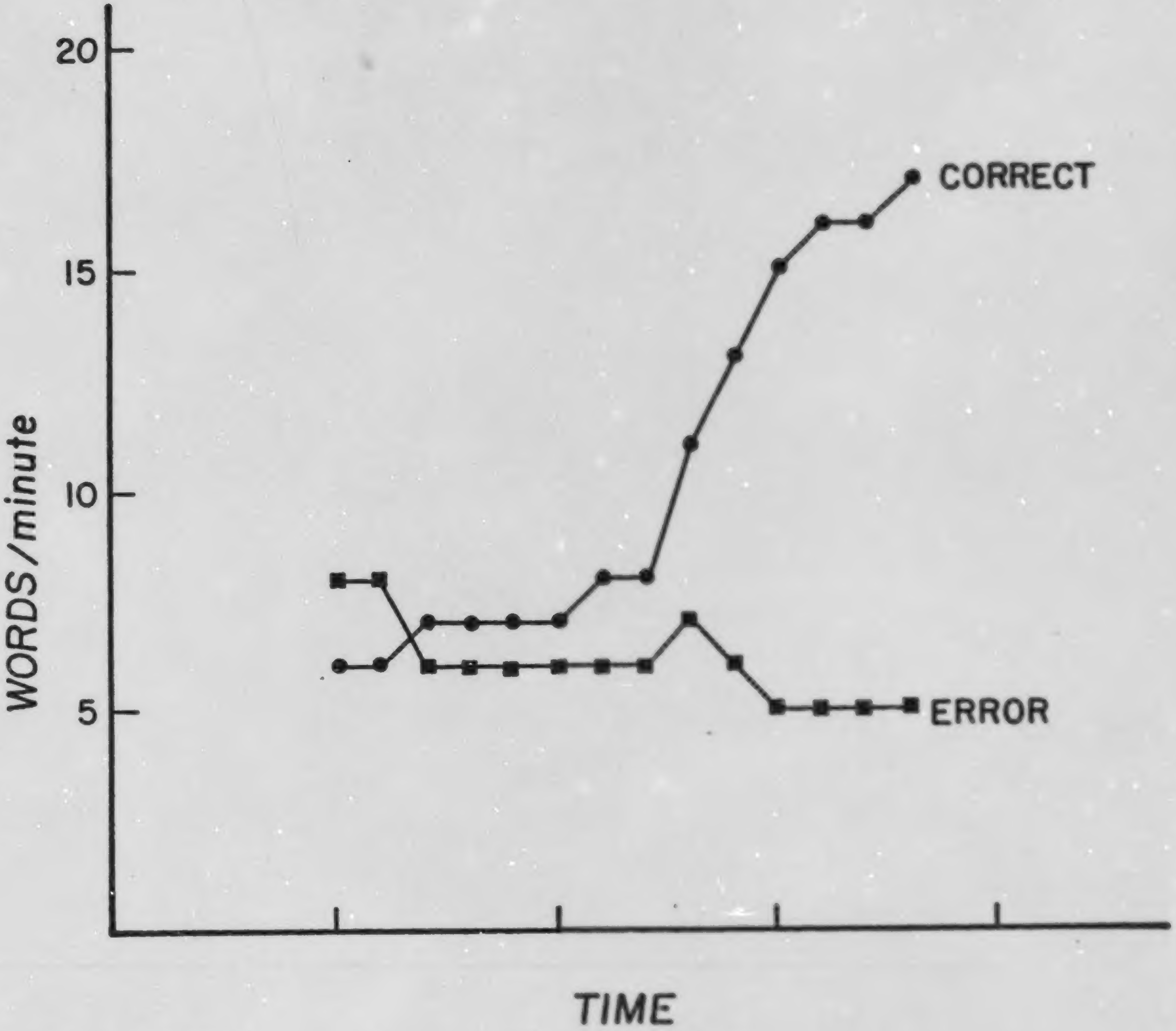

Figure 9 : MATT

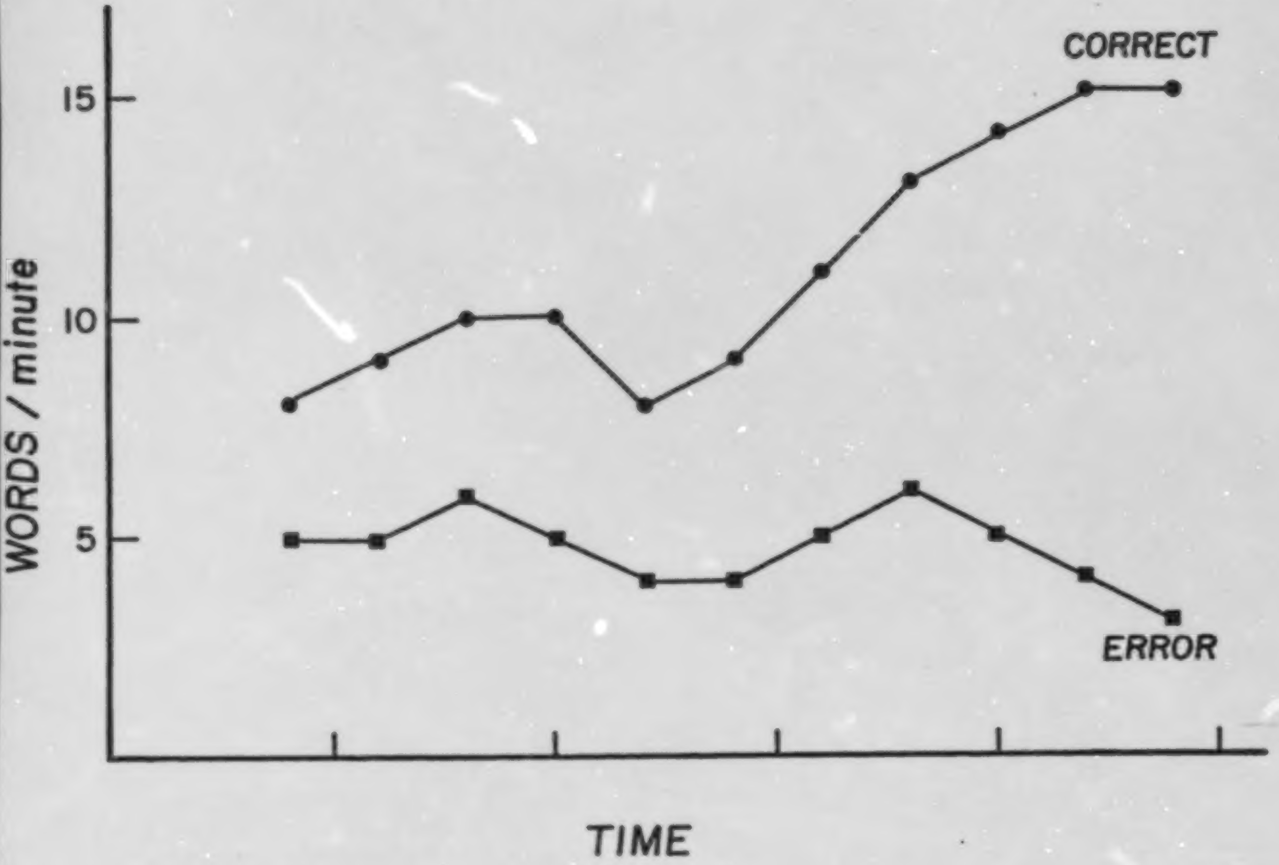

Figure 10: MARIA

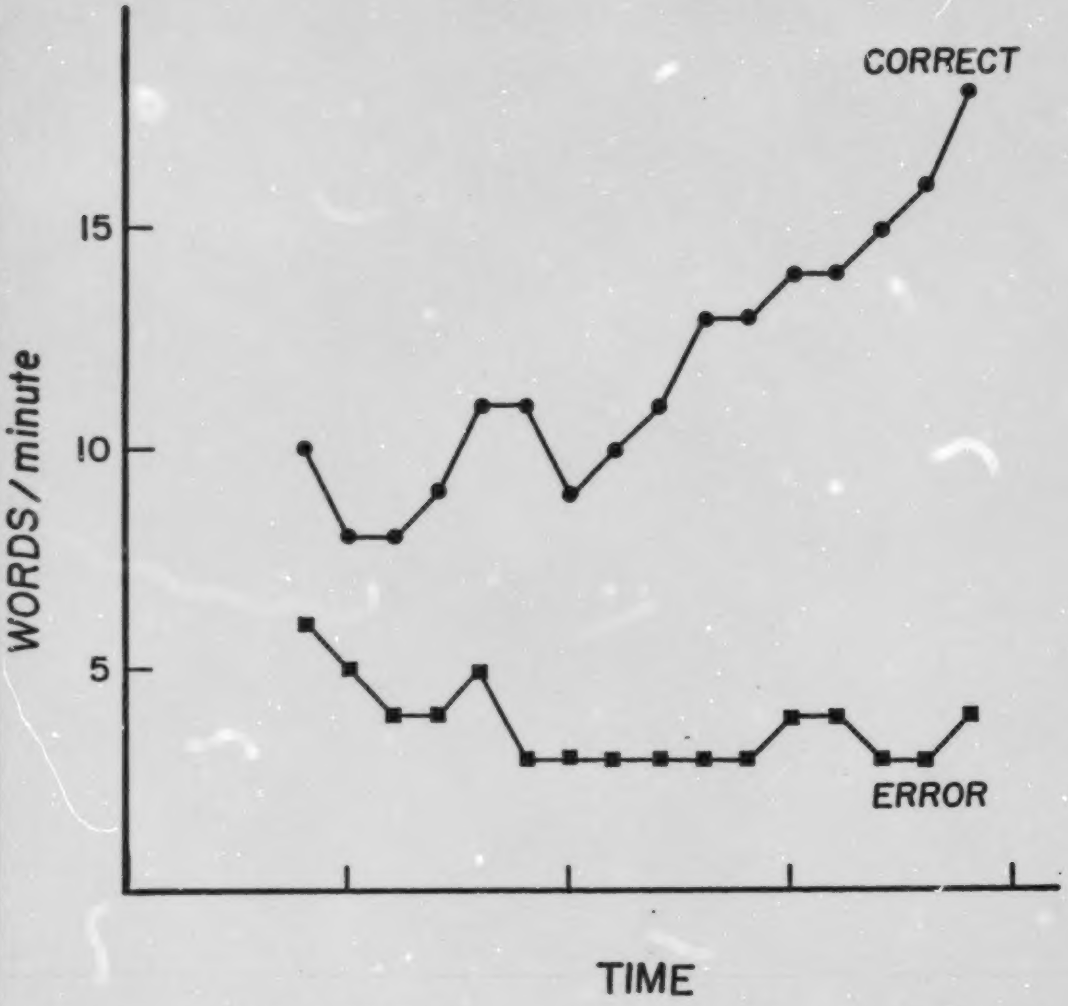

Figure 11: VIRGINIA

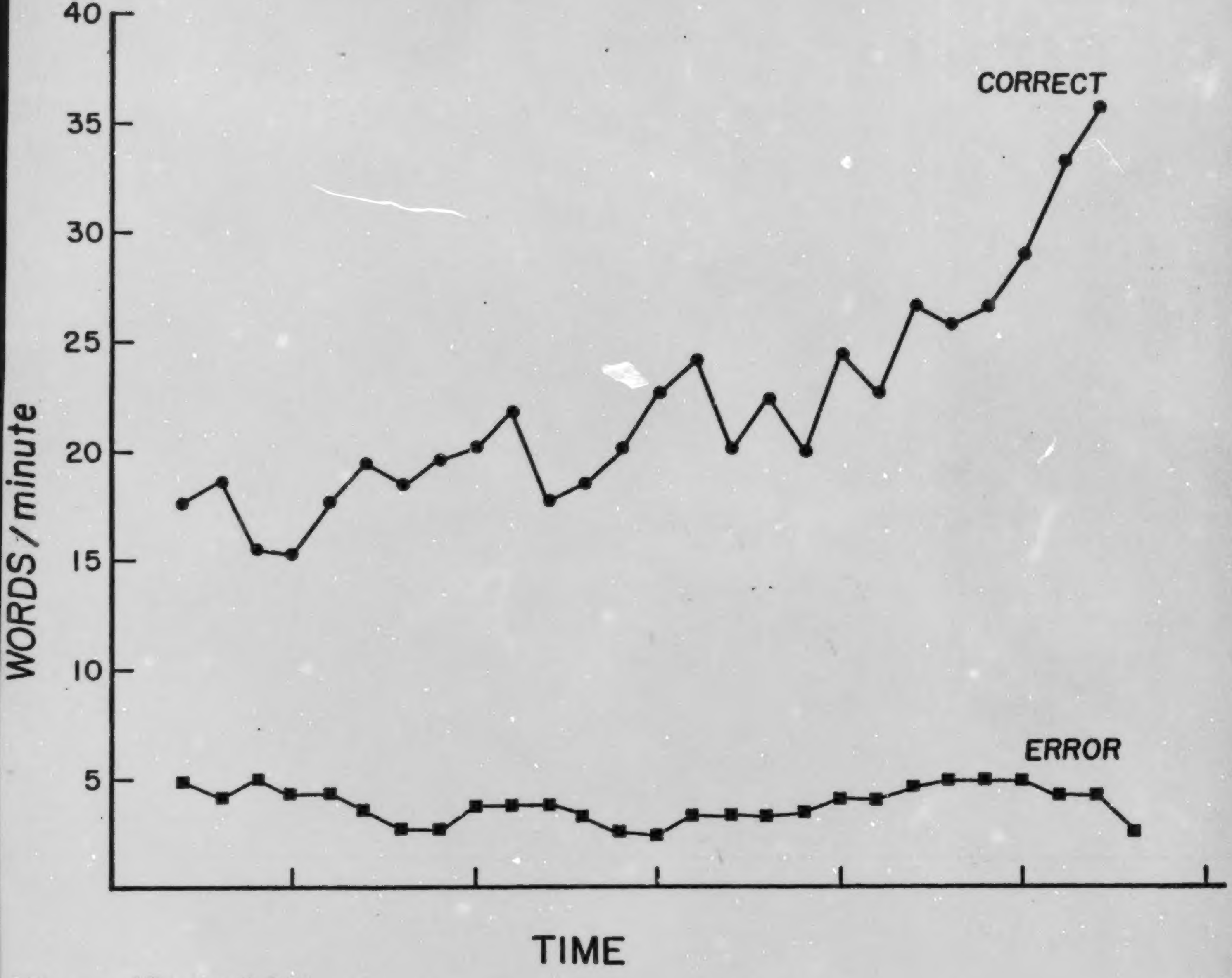

Figure 12: AARON

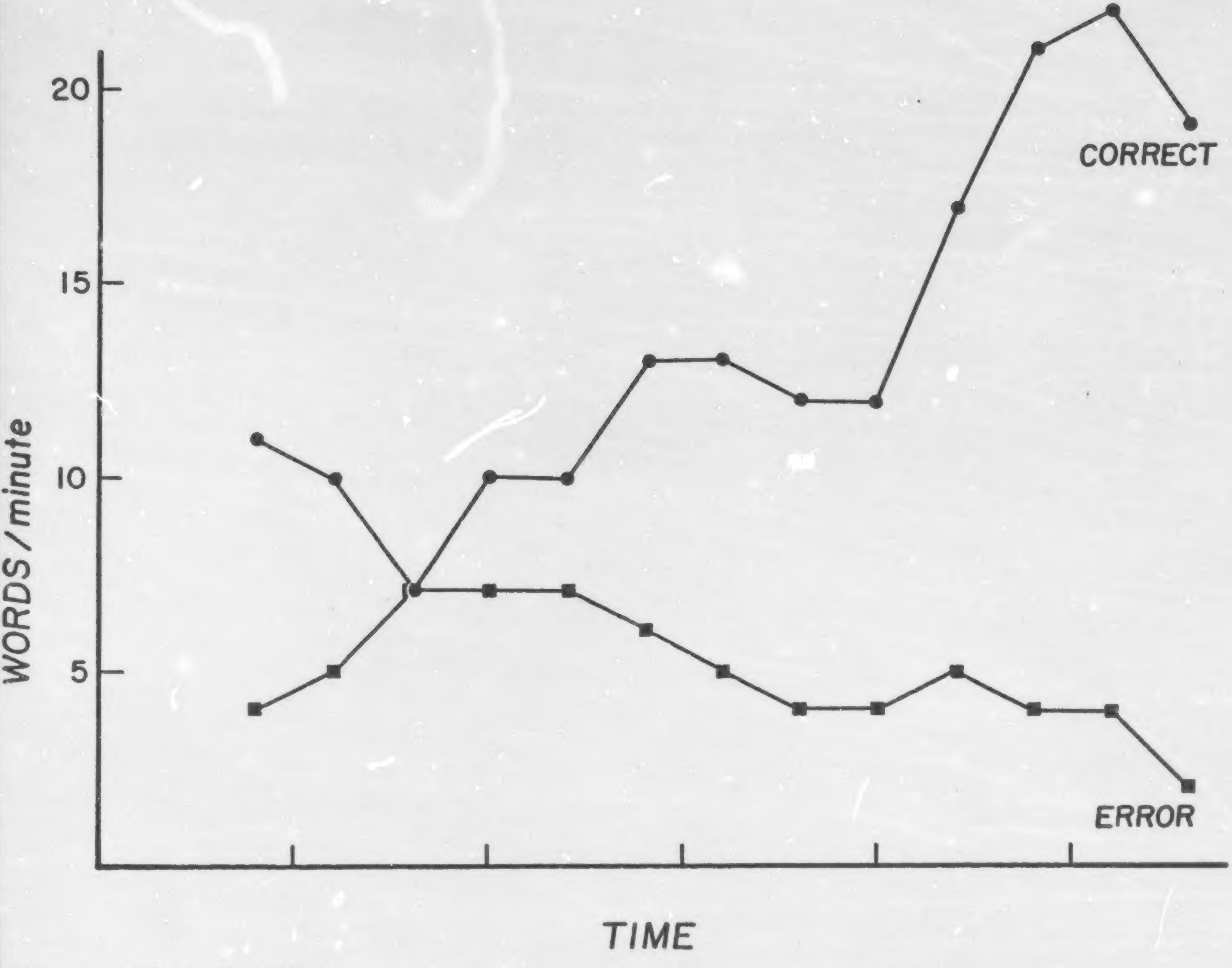

Figure 13: BRENDA

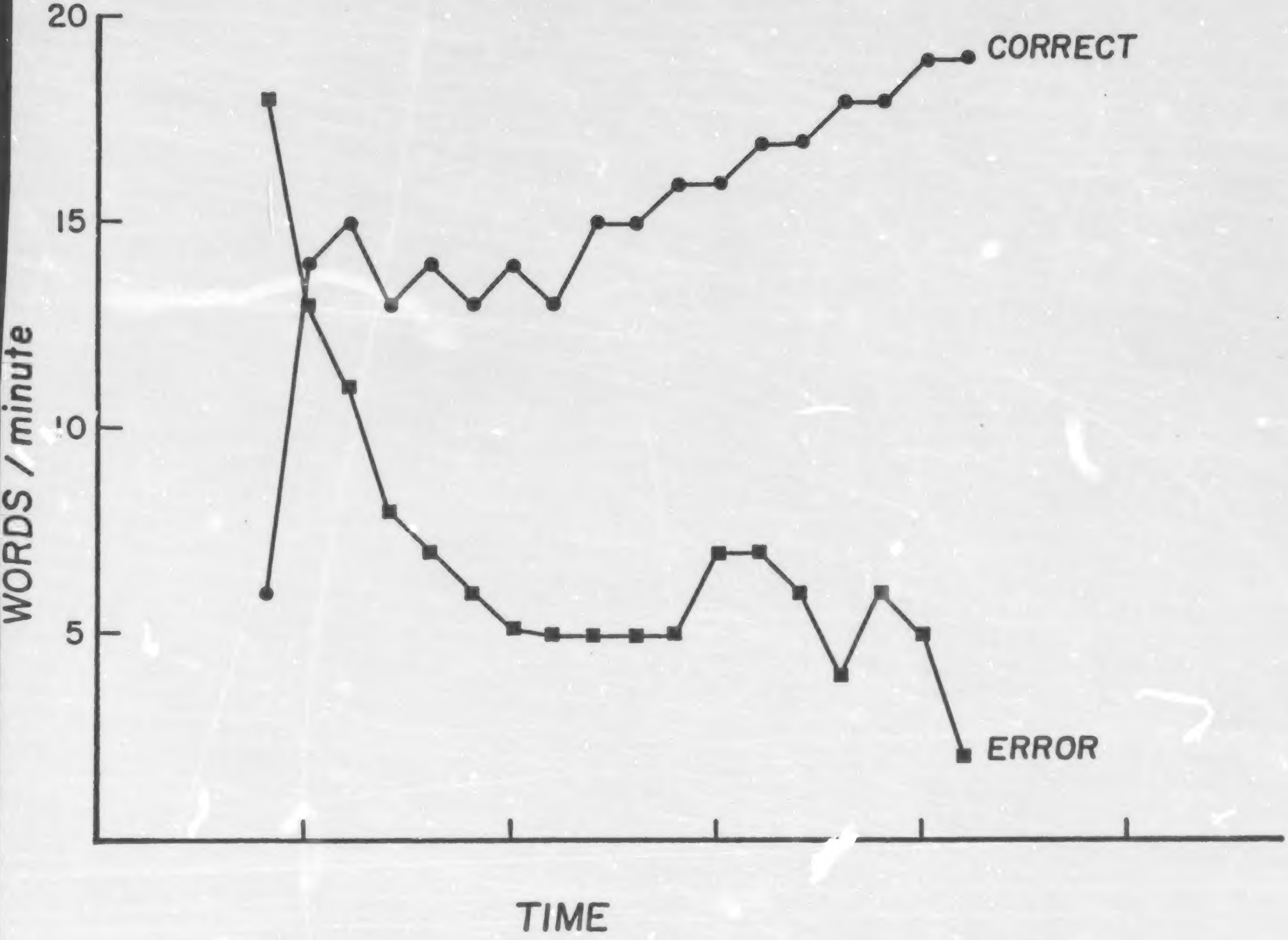

Figure 14: JASON

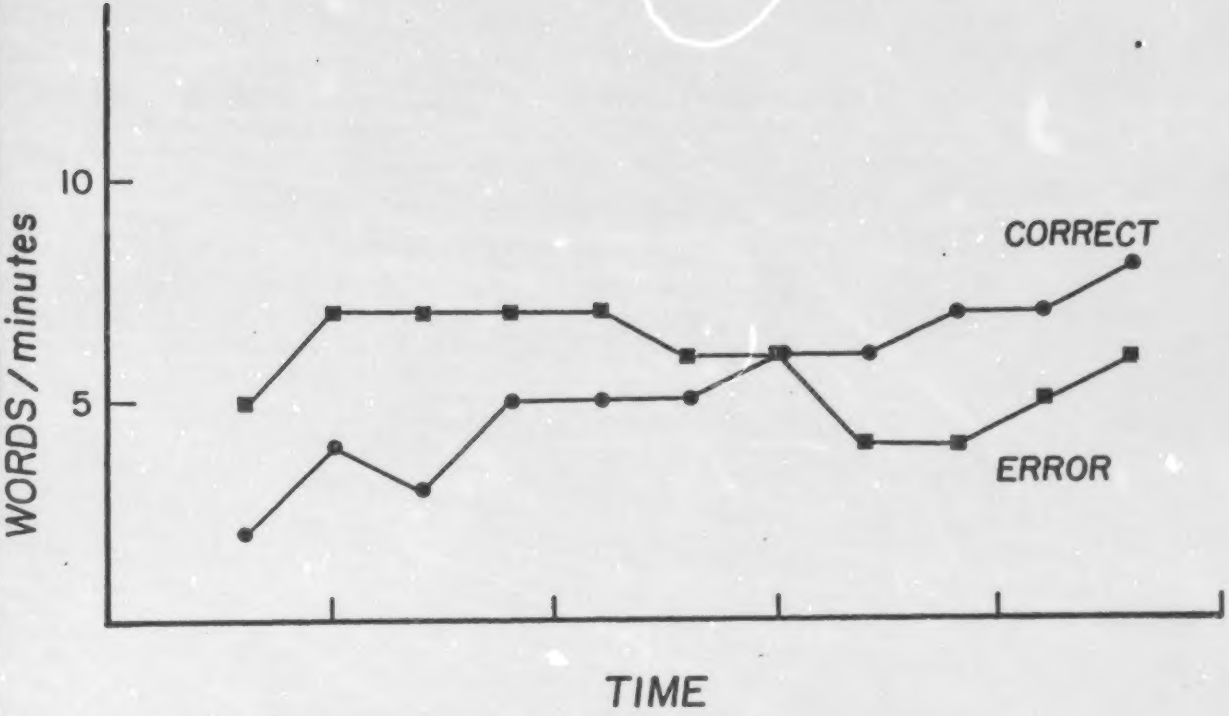

Figure 15: ANGEL

TABLE TWO

LOGAN DISTRICT RESULTS

	N	PRE		POST		PERCENT GAIN		POST ADJ. $\bar{x}$	EFFECT SIZE[+]
		$\bar{x}$	(SD)	$\bar{x}$	(SD)	$\bar{x}$	(SD)		
Letter Sounds - Test 1									
Tutees	11	24.45	(2.94)	27.09	(2.47)	.09	(.10)	27.75	.45
Tutors	3	27.33	(3.06)	26.00	(1.00)	-.04	(.12)	24.60	-
Control	12	24.33	(4.50)	24.58	(5.32)	.01	(.11)	25.33	
Sight Words - Test 1									
Tutees	11	31.82	(19.59)	51.45	(25.90)	.17	(.16)	65.85	.06
Tutors	3	71.00	(22.00)	71.33	(19.55)	.00	(.33)	55.53	-
Control	12	48.67	(41.75)	62.50	(35.00)	.12	(.12)	63.91	
Decoding Nonsense Words - Test 1									
Tutees	11	5.18	(5.98)	13.64	(9.91)	.26*	(.22)	15.60	.33
Tutors	3	11.00	(8.54)	12.00	(9.54)	.03	(.29)	8.80	-
Control	12	6.00	(8.05)	11.08	(10.09)	.16	(.24)	12.32	
Sight Words - Test 2									
Tutees	1	131.00	(-)	85.00	(-)	-.35	(-)	78.91	-
Tutors	10	122.00	(12.93)	130.40	(12.87)	.06	(.08)	131.59	.23
Control	7	117.43	(16.78)	122.86	(16.87)	.04	(.04)	127.75	
Decoding Nonsense Words - Test 2									
Tutees	1	38.00	(-)	32.00	(-)	-.11	(-)	27.31	-
Tutors	10	29.50	(7.35)	34.30	(6.38)	.09	(.06)	26.12	.42
Control	7	28.14	(12.50)	27.57	(10.36)	-.01	(.11)	30.43	
Overall Gain on All Decoding Subtests - Tests 1 & 2									
Tutees	13					.21	(.24)		.57
Tutors	14					.07	(.13)		-.09
Control	20					.09	(.21)		
Overall Gain on All Sight Words - Tests 1 & 2									
Tutees	13					.12	(.21)		.27
Tutors	14					.05	(.15)		-.36
Control	20					.09	(.11)		
Overall Gain on Diagnostic Tests 1 & 2									
Tutees	13					.13	(.16)		.70
Tutors	14					.06	(.11)		.00
Control	20					.06	(.10)		

	N	PPE		POST		GAIN		POST ADJ. $\bar{x}$	EFFECT SIZE
		$\bar{x}$	(SD)	$\bar{x}$	(SD)	$\bar{x}$	(SD)		
WJ Letter/Word ID									
Tutees	13	17.46	(6.13)	19.31	(4.57)	1.85	(3.60)	24.20	-.06
Tutors	14	29.86	(6.07)	30.00	(5.13)	.14	(2.96)	25.28	.07
Control	20	24.00	(9.43)	24.90	(8.24)	.90	(2.97)	24.72	
WJ Word Attack									
Tutees	13	5.23	(4.82)	7.54	(4.74)	2.31*	(4.92)	9.31	.13
Tutors	14	11.29	(4.50)	13.79	(4.85)	2.50*	(3.01)	1.50	.62
Control	20	7.10	(6.09)	7.75	(5.23)	.65	(3.70)	8.27	
Passage Comp.									
Tutees	13	4.38	(3.82)	6.54	(3.76)	2.16	(3.02)	10.45	.05
Tutors	14	13.00	(3.68)	13.07	(4.04)	.07	(1.86)	9.20	-.16
Control	20	8.75	(6.12)	10.20	(6.13)	1.45	(2.09)	10.17	
WJ Percentile Score									
Tutees	13	21.54	(20.82)	22.77	(21.63)	1.23	(18.32)	22.32	.00
Tutors	14	19.14	(16.85)	19.71	(16.72)	.57	(10.38)	21.12	-.05
Control	20	22.20	(19.34)	23.15	(19.88)	.95	(11.57)	22.19	
Attitudes									
Tutees	13	27.69	(5.76)	30.38	(4.96)	2.69*		31.07	.36
Tutors	14	29.86	(5.68)	28.57	(5.42)	-1.29		27.93	-.15
Control	20	28.90	(5.40)	28.90	(6.16)	0.00		28.85	

[+] Effect size computed by dividing the tutor/tutee-control difference by the standard deviation of the control group posttest.

*Significant (.05) group or gain score difference.

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Scores on all pre- and post measures are given in Table 2. On the criterion test, percentage of words correctly read was computed on pre- and posttest scores, as in Experiment 3. The pretest score was subtracted from the posttest score and a new variable, gain score on the diagnostic measure, was developed. On this measure, gains of the tutees (21%) was double that of the control students (10%). These differences were statistically significant ($p < .05$). The gain score of the tutors made on this diagnostic instrument, however, was only 8%, comparable to that of the control students. In addition, the gain score exhibited by tutors and tutees on the Woodcock-Johnson Word-attack subtest (means of 2.75 versus 2.83 respectively) was substantially higher than the mean gain of control students (.65). Tutors and tutees both exhibited significant gains on the Word-attack subtest ($t = 3.16$, $p < .004$), with tutors independently exhibiting significant gains ($t = 3.11$, $p < .008$). By contrast, control students did not exhibit significant gains ($t = .78$, $p < .44$). Significant differences for tutees, tutors, or control students were not observed on word reading, reading comprehension, or total reading subscores of the Woodcock-Johnson.

Results on the social measures. On the attitude instrument, tutees were seen to gain significantly more than the control group with mean gain scores of 2.69 versus .00, respectively. This seems to indicate a significant differential gain on the part of tutees. The attitude gain was statistically significant ($t = 2.08$, $p < .05$) on the part of the tutees, and non-significant on the part of controls ($p < 1.00$) or tutors ($p > .20$).

Results

In summary, the information gained on the criterion tests, the norm-referenced academic tests, and the attitude measures indicate that cross-age tutoring is a potentially productive and effective intervention which can be be implemented in special education classrooms with relatively little difficulty. It was seen that tutees appeared to gain substantially more than tutors, although the tutors did not differ from control students on the whole. The exception to this was the differentially superior performance of the tutors on the Woodcock-Johnson word-attack subtest. It was thought that the tutors gained substantially on this measure. Because of the highly differential amount of corrective feedback on decoding skills, they were required to tutor students several times a week for a period of over 10 weeks. In fact, the tutors were descriptively lower than control groups in gain score on other subtests of the Woodcock-Johnson, but these differences were not statistically significant, and, in fact, teacher reports gave no evidence to believe that tutors differentially lost reading skills compared with students who did not tutor on these other measures.

The individual progress charts and the significant gains in the diagnostic instrument on the part of the tutees indicate that handicapped students can, in fact, be quite potent as tutors of other handicapped students and that the net result of this tutoring may be to take a substantial amount of pressure off the resource or special class teacher. As mentioned in Experiment 3, one interpretive difficulty involved in this experiment was that, in fact, it was project staff and not resource teachers who were actively monitoring the tutoring project. The extent to which teachers themselves could, in fact, monitor these pairs and conduct their own instruction was not determined through the present investigation, although informally teachers expressed no concern that this could be done and, in fact, on several occasions, when project staff were not available for supervision, did take over this responsibility with no apparent difficulty. In addition, the scheduling difficulties which were foreseen as causing problems with cross-age tutoring were not appreciably realized, and those difficulties which did occur were overcome relatively easily. The result of these findings indicates then that resource and self-contained special education teachers would benefit well from interventions in which some of their handicapped students served as tutors for students who were less high functioning. Although the academic benefits to these tutors were less prominent than they were to the tutees, they were nonetheless tangible. It is also possible that the tutors themselves could be utilized as tutees in other investigations to help give them added additional individualized instruction.

The finding of significant gains in attitudes on the part of tutees but not tutors came as somewhat of a surprise to the investigators, particularly in light of the commonly expressed notion (Allen, 1976) that tutors would be the individual expected to gain most in self-esteem and attitude (see literature reviews and appendix). Strodtbeck, Ronchi, and Hansell (1976), however, provide a rationale for the observed differences in attitudes of the tutees. These authors suggest that a student who is employed as a tutee which involved a tutor to whom that student looks up may, in fact, feel more positive towards him/herself because of the positive attention he/she receives from the older tutor. In other words, a student may feel that since he/she receives this positive tutoring support, he may be more subject to positive self-attitudes. It must be maintained, however, that findings similar to the same-age tutoring project were found in that all students, experimental and control, scored very high in attitudes on the pre and post measures. In fact, it could be asserted that although special education students have typically been considered to exhibit low self-esteem and poor attitudes, in fact, students in this rural community of northern Utah do not. And, although this study indicates that these attitudes can be improved even higher than they are, it does appear that the priority for improving attitudes in this particular geographical location may be lower than other settings, for example, urban settings.

All students interviewed expressed enthusiasm for the tutoring project, both tutors and tutees alike, and thought that it was a useful intervention in helping students learn to read better in special education settings. Although all students responded positively to questions about their enjoyment of the tutoring situation, in fact, informal observation on the part of project staff and teachers indicated that there may be a limit beyond which enthusiasm for tutoring programs tends to dwindle and this limit may be placed at from one to two months. In fact, a recent meta-analysis of tutoring in the regular grades (Cohen, Kulik, & Kulik, 1983) indicates that the relative effects of tutoring after the first month tend to dissipate. This finding is congruent with the observations of many of those who worked in school settings but not always supported by researchers whose investigations are, in fact, often necessarily short: students, teachers, and other school personnel often report that students have a preference for novelty and any intervention, no matter how powerful at first, may tend to wane in interest after several weeks. In fact, it was remarked to one of the project staff by one of the teachers that the tutoring intervention itself would be a useful procedure because the second semester of the year had begun and students had begun to become tired of "the same old thing." At what point tutoring itself becomes "the same old thing," however, cannot be assessed from the results of the study.

In addition, all teachers alike expressed enthusiasm for the tutoring interventions and expressed many settings in which this type of tutoring may be appropriate and materials which could be used. A few isolated criticisms of the materials similar to those in Experiment 3 were noticed: that although the reading level was appropriate, the interest level of some of the materials, designed for very young students, may have been too low for some of the students in special education. This apparently did not bother the tutors who saw themselves as teachers, but may have been a negative influence in some cases on the tutees themselves. Nevertheless, all teachers agreed that tutoring had been a positive intervention and was an appropriate use of the special education student's time. Although one regular classroom teacher expressed concern that the tutor received as much reading instruction as possible, in fact, no special education teacher reported concern for loss of educational time to the tutor.

Summary and Conclusions

The purpose of this research was to measure the effects on reading achievement and social acceptance of involving handicapped students as tutors. A total of 105 handicapped students were trained as tutors with an equal number in comparison groups who did not tutor. In addition to the tutors, 70 regular class students and 15 handicapped students particpated in the project as tutees.

Four separate experiments were conducted in which upper elementary grade handicapped students tutored from three to five times each week for a total of between 10 to 14 weeks. Tutoring sessions typically lasted 15 to 20 minutes. In the first experiment self-contained mentally retarded and learning disabled students tutored nonhandicapped peers in sign language. The primary purpose of this study was to determine the effects of tutoring on the social acceptance of handicapped tutors through multiple observation of free-play interaction during recess. In the second experiment handicapped tutored first grade nonhandicapped students in reading. A combination of behaviorally handicapped and learning disabled students in both self-contained and resource settings participated as tutors and comparison students. To measure effects on reading achievement and self-concept a variety of standardized and criterion referenced tests were administerd to tutors and tutees in both the treatment and comparison groups. Experiment three was similar to the second experiment, except that handicapped students also participated as tutees.

In the fourth experiment reading was again chosen as the tutoring topic, but handicapped students engaged in a form of companion study in which each continually traded roles as tutor and tutee. In all four experiments measures were taken of tutee performance as well as that of the tutor.

The following conclusions can be drawn from the research conducted during this first year of the project:

1) When given appropriate training and supervision, handicapped students can function effectively as tutors. They can learn to demonstrate instuctional content, monitor tutee performance, and give appropriate feedback. While some students develop these skills more readily than other sutdents, even those with more severe handicaps were able to function in the tutoring role.

2) Both tutors and tutees experience growth in the topic tutored. Those in the sign language study developed an impressive signing vocabulary in a relatively short period of time. Those in the reading studies usually showed more growth in reading than comparison students. This conclusion is important because it implies that teaching someone else is an effective, but seldom used strategy for improving learning among a wide variety of handicapped students.

3) Socially isolated handicapped students often experience increased socail acceptance as a result of tutoring nonhandicapped peers. While all of the handicapped tutors int he sign language study did not show marked increases in social interaction, some

made impressive gains. When the gains are compared with other students in similar self-contained settings, the improvements are expecially meaningful. In other words, self-contained students (whether LD or EMR), without some intervention like reverse-role tutoring, usually have little if any interaction with their peers in the regular classroom.

4) For a variety of reasons conclusions regarding the effects of tutoring on self-concept cannot be staed with as much confidence as the conclusions concerning academic achievement and socail acceptance. Data from the second experiment showed that handicapped tutors improved (over controls) in their perception of ability in tipics related to the topic tutored (reading and spelling). In experiment four, handicapped tutees showed similar gain~~e~~s over student~~s~~ in a comparison group. While measures of general self-concept did not show significant gains for students in treatment groups, parents and teachers reported that self-concept was in their opinion the primary benefit of the program.

5) Parents, teachers, and tutees perceive reverse-role tutoring as an effective intervention strategy in special education. They believe that handicapped as well as nonhandicapped students receive a variety of academic and social benefits from their participation in the program. Most parents report benefits they have noticed at home in addition to the observed benefits measured in the school setting.

Future Research

The following questions should be addressed in future studies involving handicapped students as tutors:

1) How does reverse-role tutoring compare with other carefully defined instructional treatments. In the present project tutoring was often compared with a variety of forms of classroom instruction, rather than a single, carefully controlled treatment. Future data could give special educators more information concerning the worth of the tutoring strategy, when compared with alternative approaches under consideration.

2) Is there a novelty effect of reverse-role tutoring? With more repeated measures of tutor and tutee performance during the tutoring sessions, is there an optimum time period for tutoring to occur. With longer treatment time this question could be addressed.

3) In what other content areas is reverse-role tutoring effective? While sign language and reading have shown real promise in the present project, would other content areas be as effective or even more appropriate?

4) Are there other side benefits to reverse-role tutoring not measured in the present research project? Does sign language improve handicapped sutdents communication skills with spoken English? Does reverse-role tutoring increase the social sensitivity of behaviorally handicapped tutors?

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APPENDIX A

Meadowbrook Sign Language Test

MEADOWBROOK SIGN LANGUAGE TEST

Student: Age:

Examiner:

Draw a line through each incorrectly signed word.

COLOR RED ORANGE
BLACK BROWN WHITE
PURPLE YELLOW GREEN
BLUE TAN PINK

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A B C D E F G H I J K L M
N O P Q R S T U V W X Y Z

FATHER MOTHER GRANDFATHER GRANDMOTHER
SISTER BROTHER BABY FRIEND

STAND SIT WALK RUN
SLIDE SWING ROLLER SKATE ICE SKATE
JUMP

MILK ICE CREAM SANDWICH COOKIES
CAKE PIE ORANGE CANDY

SOCKS SHOES COAT BOOK
HOUSE SMILE TELEPHONE RAIN
FLOWER FLAG TOOTHBRUSH SOUP
CORN BREAD BANANA POTATO

POPCORN	JAM/JELLY		
SICK	SLEEP	DANCE	CRY
LOVE	DRINK	SWIM	BICYCLE
BIRD	CAT	TIGER	LION
ELEPHANT			
DENTIST	DOCTOR	NURSE	TEACHER
	KNIFE	FORK	SPOON
SHIP	SHEEP	COW	TURTLE
WORM	SPIDER	TYPEWRITER	JUMP ROPE
BUTTERFLY	FISH	DUCK	POLICEMAN
LETTER	BASEBALL	HORSE	FOOTBALL
BASKETBALL	AIRPLANE	CAR	RABBIT
DOG			
HAPPY	BIRTHDAY	SPRING	SUMMER
FALL	WINTER	HELP	MOUNTAIN
EAT	WORK	CLEAN	SCHOOL
BEAR	TREE	TABLE	CHAIR
MUSIC	PLAY	MONEY	WATER
FRENCH FRIES	CHOCOLATE MILK	CHEESE	EGG
SEW	(TV)TELEVISION	WATCH	YES
NO	TO	DEAR	
HOW	WHERE	WHAT	IS
AM	ARE	LIKE	FINE
YOU	YOUR	MY	OLD
DO	LIVE	NAME	
FOOD	HAIR	EYES	I
IN			

HOW OLD ARE YOU?	I AM
WHERE DO YOU LIVE?	I LIVE IN
WHAT IS YOUR NAME?	MY NAME IS

WHAT IS YOUR TEACHER'S NAME?	MY NAME IS
WHAT IS YOUR FRIEND'S NAME?	MY FRIENDS'S NAME IS
WHAT FOOD DO YOU LIKE?	I LIKE
HOW ARE YOU?	I AM FINE.
WHAT DO YOU LIKE TO DO?	I LIKE TO
WHAT COLOR DO YOU LIKE?	I LIKE
WHAT COLOR ARE YOUR SHOES?	MY SHOES ARE
WHAT COLOR IS YOUR HAIR?	MY HAIR IS
WHAT COLOR ARE YOUR EYES	MY EYES ARE
WHAT COLOR IS YOUR COAT?	MY COAT IS
WHAT COLOR IS YOUR HOUSE?	MY HOUSE IS

APPENDIX B

Free-Play Interaction Form

FREE-PLAY INTERACTION FORM

DATE:
DURATION:
NO. OF STUDENTS:
NAMES OF STUDENTS:

TUTEE OR OTHER:
JUDGMENT:
DESCRIPTION OF INTERACTION:

DATE:
DURATION:
NO. OF STUDENTS:
NAMES OF STUDENTS:

TUTEE OR OTHER:
JUDGMENT:
DESCRIPTION OF INTERACTION:

APPENDIX C

Parent Phone Interview Guide

PARENT PHONE INTERVIEW GUIDE

Name ______________________________ Phone ____________________

Student's Name ______________________ Date Interviewed __________

School ____________________________ Class ____________________

1. a. Did your child mention anything to you about the tutoring program that he/she was participating in? yes________ no_______

   b. What types of things did your child say about the program?

   c. How would you describe your child's feelings about this tutoring program?

   very positive____ positive____ negative____ very negative___ no opinion____

   d. How would you describe your feelings as a parent about your child's participation in this tutoring program?

   very positive____ positive____ negative____ very negative___

   no opinion____

2. a. Based on anything you noticed about your child, do you feel that this tutoring program had any effects on your child in the following ways:

Types of Effects	Yes	No
Language Skills	____	____
How he/she feels about himself (self-esteem)	____	___
Relating to other kids & people (social interaction)	____	___

   If yes, give specific examples:

   b. Has the amount of conversing your child does at home:

   increased ______ decreased ______ stayed the same ______

3. Did you do anything at home to supplement or reinforce the skills being taught and practiced by the tutoring program?

yes ________ no _________

If yes, what types of things did you do?

4. a. Would you like to see this tutoring program continued in the school?

yes __________ no ___________

b. Would you like to see your child participate in this program again next year?

yes __________ no ____________

5. Recommendations: What would you recommend we do differently in the future to make this tutoring program more succesful?

6. Any additional comments:

15. What was s/he like at first?

    a) Is s/he different or seem different to you now?

        1) In what ways?

        2) Do you feel differently toward him/her now?

        3) What did you learn about him/her that you wouldn't have known if you didn't do this?

    b) What did s/he learn?

16. What do you think the kid who tutored you felt toward you before this experience?

    a) Do you think they feel differently toward you now?

    b) In what ways?

17. Do you feel differently towards mentally retarded kids now that you've had this experience?

    a) In what ways?

18. Would you do it again?

APPENDIX D

Tutee Interview Guide

TUTEE INTERVIEW GUIDE

Interview Questions

1. What did you like about learning sign language?

2. What did you dislike about it?

3. What do you think those of you who have done this have learned?

4. What have you learned?

5. What have you learned about Mrs. _________ kids?

6. Did anything surprise you?

7. Did you ever feel like your tutor knew a lot more than you?

8. How did you feel when you realized that Mrs. ____________ kid knew more than you?

9. Did you ever forget how to sign something or had some kind of trouble learning a sign?

   a) How did you feel being helped by your tutor?

10. Have you ever heard Mrs. ____________ kids called names?

    a) What names?

        1) What is this class called?

    b) Were these names negative or positive?

    c) What did you do when you heard them being called names?

    d) Do you think you'd do anything different now?

        1) What?

11. In what ways are these kids different from other kids, say in your class?

    a) Feelings?

    b) Families?

    c) Looks?

    d) Do at recess?

    e) Likes and dislikes?

    f) Personalities?

12. In what ways are these kids all alike in the areas we've just discussed? (See a - f above)

13. How do you think this has helped Mrs. ____________ kids? What have they learned from tutoring?

    a) Why do think we had Mrs. ____________ kids tutor the other kids in sign language? Why not the other way around?

14. Who did nost of the tutoring for you?

APPENDIX E

Tutoring Skills Record Form

TUTORING SKILLS RECORD FORM

Date ___________________

How well do they demonstrate each sign

How effective is their feedback to the learner

How well do they monitor learner performance of each sign

How enjoyable is the tutoring task for the tutor

How enjoyable is the tutoring for the tutee

APPENDIX F

Schedule of Procedures

SCHEDULE OF PROCEDURES

October

1. Prepare training materials.
2. Send home parental consent forms.
3. Begin training handicapped students in sign language.

November

1. Continue creating materials.
2. Continue training in sign language.

December

1. Orient the classroom aide.
2. Train aide in sign language and tutoring procedures.
3. Aide trains handicapped students in sign language and tutoring skills.
4. Aide conducts free-play time observations.

January

1. Train aide in sign language.
2. Aide continues training tutors.
3. Aide continues observations.
4. Prepare additional ttutoring materials.

February

1. Train aide in sign language.
2. Aide continues training tutors.
3. Aide continues observations.
4. Meet with fifth grade teachers to enlist tutees.
5. Send home parental consent forms with tutees.
6. Begin tutoring.

March

1. Train Aide in sign language.
2. Aide contuinues to train tutors.
3. Aide continues observations.
4. Tutoring continues.
5. Conduct meeting with the parents of tutees.

May

1. Train aide in sign language.
2. Aide continues to train tutors.
3. Aide continues observations.
4. Tutoring continues and completes.
5. Administer sign language tests.
6. Interview tutees.

June

1. Interview parents.
2. Synthesize and analyze data.
3. Write report.

July

1. Complete writing report.

APPENDIX G

Parental Consent Form

Parental Consent Form

Dear Parent,

Your child, ____, has been selected for participation in a special peer-tutoring research project at our school.

Your child will be the recipient of tutoring in sign language from an upper grade special education student who has received special tutor training. Your child will be tutored for fifteen minutes three times a week.

We believe that your child will receive great benefits from participating in this program. These benefits would include improved interpersonal relationship skills and increased awareness of handicapped students.

It is important that we receive your permission before your child can participate in this program. Enclosed is a parental permission form to be filled out, signed and returned to your child's teacher by ________________________. If you do not approve of your child's participation in this program please contact us before that date. If we do not hear from you before that date, we will assume that you grant permission and we will allow your child to participate.

We appreciate your prompt consideration of this matter and look forward to a great experience with this project. If you have questions or concerns about this project, please feel free to contact either your child's principal or teacher.

Thank you,

Parental Consent Form

____
Date

INFORMED CONSENT SPECIAL EDUCATION CHILDREN AS TUTORS PROJECT

I hereby give consent to have my child, ________________________, participate in these activities of the special education children as tutors research project. The project has been explained completely to me. I understand that my child will be serving as a tutor (or tutee) of another child in the area of sign language. I further understand that my child will be using project supplied materials and will be properly supervised.

I understand that I may withdraw my child from the study at any time if I so desire.

____
Signature

____
Witness

APPENDIX H

Crestview Sign Language Test

CRESTVIEW SIGN LANGUAGE TEST

Student: Age:

Examiner:

Draw a line through each incorrectly signed word.

A B C D E F G H I J K L M

N O P Q R S T U V W X Y Z

BLACK BROWN TAN WHITE

PINK RED COLOR GREEN

PURPLE BLUE YELLOW ORANGE

MOTHER FATHER GRANDFATHER GRANDMOTHER

SISTER BROTHER BABY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

MILK PIE COOKIES CANDY

CAKE ICE CREAM ORANGES SANDWICHES

YES NO HELLO BOOK

HAPPY BIRTHDAY THANK-YOU

WHAT HOW WHERE DO

YOU YOUR MY I

ARE IS AM IN

LIKE	HOUSE	HAIR	EYES
COAT	SHOES	NAME	TEACHER
FINE	LIVE	FOOD	OLD
ANIMAL	DOG	CAT	BIRD
FISH	COW	HORSE	TURKEY
RABBIT	LION	TIGER	ELEPHANT
HUNTING	FISHING	SWIM	BUTTERFLY
SPIDER			
ACTIVITY	COME	PLAY	BASKETBALL
DANCE	BICYCLE	BASEBALL	MOTORCYCLE
KICK/SOCCER	GO		
EAT	POPCORN		WATER
SPAGHETTI	POTATO	DOUGHNUT	HAMBURGER
FRENCH FRIES	COOK	MEAT	KNIFE
FORK	SPOON	HUNGRY	HOT
WARM	TOOTHBRUSH		
TIME	HOUR	WEEK	MONTH
YEAR	SPRING/GROW	SUMMER	FALL
WINTER	MORNING	NOON	AFTERNOON
NIGHT	ALL NIGHT	YESTERDAY	TODAY
TOMORROW	LATER		
KID	DOCTOR	NURSE	OPERATION
CLASS/GROUP	FRIEND	POLICEMAN	MEET
FAMILY	TELEPHONE	FLOWER	TREE

FLAG	BURN/FIRE	TABLE	(TV)TELEVISION
BED			
OPEN	CLOSE	FAST	SLOW
RIGHT	LEFT	SMART	
	LOUSY	GOOD	
LOVE	DISLIKE		CAN'T
	DON'T/NOT	ME	
FEEL	AFRAID	CRY	MAD/GROUCHY
TIRED	SLEEPY	SICK	CURIOUS
PROUD			FUNNY
AIRPLANE	CAR/DRIVE	PAPER	RAIN
		MOVIE	MUSIC/SONG
	BATHROOM		
AND	TELL/SAY	MORE	SMALL
		NONE/NOTHING	LARGE
			HAVE

HOW OLD ARE YOU?	I AM
WHERE DO YOU LIVE?	I LIVE IN
WHAT IS YOUR NAME?	MY NAME IS

WHAT IS YOUR TEACHER'S NAME?	MY NAME IS
WHAT IS YOUR FRIEND'S NAME?	MY FRIENDS'S NAME IS
WHAT FOOD DO YOU LIKE?	I LIKE
HOW ARE YOU?	I AM FINE.
WHAT DO YOU LIKE TO DO?	I LIKE TO
WHAT COLOR DO YOU LIKE?	I LIKE
WHAT COLOR ARE YOUR SHOES?	MY SHOES ARE
WHAT COLOR IS YOUR HAIR?	MY HAIR IS
WHAT COLOR ARE YOUR EYES	MY EYES ARE
WHAT COLOR IS YOUR COAT?	MY COAT IS
WHAT COLOR IS YOUR HOUSE?	MY HOUSE IS

APPENDIX I

Woodcock-Johnson Psycho-Educational Battery

EXAMINER__________ Testing Date__________ Reason for Testing__________

WOODCOCK-JOHNSON PSYCHO-EDUCATIONAL BATTERY

RESPONSE BOOKLET

PART TWO: TESTS OF ACHIEVEMENT
PART THREE: TESTS OF INTEREST LEVEL

By Richard W. Woodcock and M. Bonner Johnson

NAME__________

PARENT GUARDIAN__________

SCHOOL AGENCY__________ TEACHER DEPARTMENT__________

CITY__________ STATE__________

ADULTS: Occupation__________

Education__________

SEX M ☐ F ☐

BIRTHDATE

____

AGE_____ Yrs _____ Mos

GRADE PLACEMENT__________

PERCENTILE RANK PROFILE: Norms based on ☐ Subject's Grade Placement______

☐ Subject's Age______ ☐ Other__________ (Local norms, some other grade level, etc.)

	1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
READING															
MATHEMATICS															
WRITTEN LANGUAGE															
KNOWLEDGE															
SKILLS (Preschool)															
SCHOL INTEREST															
NONSCHOL INTEREST															
	1	2	5	10	20	30	40	50	60	70	80	90	95	98	99

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☐ Subtest 13
Letter-Word Identification

Basal ..... *5 consecutive correct*
Ceiling ..... *5 consecutive failed*

1 ___ O
2 ___ B
3 ___ R

4 ___ Z
5 ___ G
6 ___ H
7 ___ U

8 ___ is
9 ___ go
10 ___ to

11 ___ in
12 ___ dog
13 ___ not
14 ___ get
15 ___ had

16 ___ his
17 ___ keep
18 ___ must
19 ___ got
20 ___ part

21 ___ light
22 ___ once
23 ___ knew
24 ___ point
25 ___ whole

26 ___ piece
27 ___ shoulder
28 ___ island
29 ___ whose
30 ___ announcer
31 ___ ordinary
32 ___ knowledge
33 ___ bounties
34 ___ knead
35 ___ thermostat

36 ___ moustache
37 ___ courageous
38 ___ acrylic
39 ___ sufficient
40 ___ significance

41 ___ therapeutic
42 ___ silhouette
43 ___ municipality
44 ___ debris
45 ___ trivialities

46 ___ pinochle
47 ___ debutante
48 ___ stochastic
49 ___ tricot
50 ___ argot

51 ___ satiate
52 ___ kopje
53 ___ enceinte
54 ___ puisne

13 ☐ RAW SCORE

☐ Subtest 14
Word Attack

Basal ..... *Item 1*
Ceiling ..... *5 consecutive failed*

A ___ nat
B ___ ib

1 ___ tiff
2 ___ hap
3 ___ nan
4 ___ mell
5 ___ jox

6 ___ leck
7 ___ then't
8 ___ chur
9 ___ feap
10 ___ wuss

11 ___ shomble
12 ___ yosh
13 ___ mibgus
14 ___ splaunch
15 ___ saist

16 ___ wroutch
17 ___ knoink
18 ___ quog
19 ___ lindify
20 ___ whumb

21 ___ phigh
22 ___ hudned
23 ___ malreatsun
24 ___ cythe
25 ___ cuge
26 ___ depnonlel

14 ☐ RAW SCORE

☐ Subtest 15
Passage Comprehension

Basal ..... *5 consecutive correct*
Ceiling ..... *5 consecutive failed*

A ___ man

1 ___ hat

2 ___ book
3 ___ box

4 ___ is
5 ___ time
6 ___ books

7 ___ at
8 ___ is
9 ___ cities

10 ___ his
11 ___ turtles
12 ___ ship

13 ___ shoe
14 ___ paper
15 ___ water

16 ___ round
17 ___ read
18 ___ but

19 ___ alphabet
20 ___ forests
21 ___ nomads

22 ___ capitals
23 ___ except
24 ___ fear

25 ___ though
26 ___ by

15 ☐ RAW SCORE

APPENDIX J

Piers-Harris Children's Self-Concept Scale

"THE WAY I FEEL ABOUT MYSELF"

The Piers-Harris Children's Self-Concept Scale

Ellen V. Piers, Ph.D. and Dale B. Harris, Ph.D.

Published by

wps WESTERN PSYCHOLOGICAL SERVICES
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12031 Wilshire Boulevard
Los Angeles, California 90025

Name: ____ Today's Date: ______________

Age: ________________ Sex (circle one): Girl Boy Grade: ________________________

School: ___________________________ Teacher's Name (optional): ________________________

Directions: Here are a set of statements that tell how some people feel about themselves. Read each statement and decide whether or not it describes the way you feel about yourself. If it is *true or mostly true* for you, circle the word "yes" next to the statement. If it is *false or mostly false* for you, circle the word "no." Answer every question, even if some are hard to decide. Do not circle both "yes" and "no" for the same statement.

Remember that there are no right or wrong answers. Only you can tell us how you feel about yourself, so we hope you will mark the way you really feel inside.

TOTAL SCORE: Raw Score______ Percentile______ Stanine______

CLUSTERS: I______ II______ III______ IV______ V______ VI______

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2 3 4 5 6 7 8 9
Printed in U.S.A.
W-180A

1. My classmates make fun of me .... yes no
2. I am a happy person .... yes no
3. It is hard for me to make friends .... yes no
4. I am often sad .... yes no
5. I am smart .... yes no
6. I am shy .... yes no
7. I get nervous when the teacher calls on me .... yes no
8. My looks bother me .... yes no
9. When I grow up, I will be an important person .... yes no
10. I get worried when we have tests in school .... yes no
11. I am unpopular .... yes no
12. I am well behaved in school .... yes no
13. It is usually my fault when something goes wrong ..... yes no
14. I cause trouble to my family .... yes no
15. I am strong .... yes no
16. I have good ideas .... yes no
17. I am an important member of my family .... yes no
18. I usually want my own way .... yes no
19. I am good at making things with my hands .... yes no
20. I give up easily .... yes no
21. I am good in my school work .... yes no
22. I do many bad things .... yes no
23. I can draw well .... yes no
24. I am good in music .... yes no
25. I behave badly at home .... yes no
26. I am slow in finishing my school work .... yes no
27. I am an important member of my class .... yes no
28. I am nervous .... yes no
29. I have pretty eyes .... yes no
30. I can give a good report in front of the class .... yes no
31. In school I am a dreamer .... yes no
32. I pick on my brother(s) and sister(s) .... yes no
33. My friends like my ideas .... yes no
34. I often get into trouble .... yes no
35. I am obedient at home .... yes no
36. I am lucky .... yes no
37. I worry a lot .... yes no
38. My parents expect too much of me .... yes no
39. I like being the way I am .... yes no
40. I feel left out of things .... yes no

41. I have nice hair .... yes no

42. I often volunteer in school .... yes no

43. I wish I were different .... yes no

44. I sleep well at night .... yes no

45. I hate school .... yes no

46. I am among the last to be chosen for games .... yes no

47. I am sick a lot .... yes no

48. I am often mean to other people .... yes no

49. My classmates in school think I have good ideas .... yes no

50. I am unhappy .... yes no

51. I have many friends .... yes no

52. I am cheerful .... yes no

53. I am dumb about most things .... yes no

54. I am good-looking .... yes no

55. I have lots of pep .... yes no

56. I get into a lot of fights .... yes no

57. I am popular with boys .... yes no

58. People pick on me .... yes no

59. My family is disappointed in me .... yes no

60. I have a pleasant face .... yes no

61. When I try to make something, everything seems to go wrong .... yes no

62. I am picked on at home .... yes no

63. I am a leader in games and sports .... yes no

64. I am clumsy .... yes no

65. In games and sports, I watch instead of play .... yes no

66. I forget what I learn .... yes no

67. I am easy to get along with .... yes no

68. I lose my temper easily .... yes no

69. I am popular with girls .... yes no

70. I am a good reader .... yes no

71. I would rather work alone than with a group .... yes no

72. I like my brother (sister) .... yes no

73. I have a good figure .... yes no

74. I am often afraid .... yes no

75. I am always dropping or breaking things .... yes no

76. I can be trusted .... yes no

77. I am different from other people .... yes no

78. I think bad thoughts .... yes no

79. I cry easily .... yes no

80. I am a good person .... yes no

APPENDIX K

Student Perception of Ability Scale

STUDENT'S PERCEPTION OF ABILITY SCALE

Frederic J. Boersma and James W. Chapman

Name ______________________ Birth Date ______________

Boy _____ Girl _____ Grade _____ School ______________

DIRECTIONS:
This booklet has a list of statements about how you feel about school. Some of these are true and some are not. Circle the YES if the statement is usually true of you. Circle the NO if the statement is not usually true of you. Read each question carefully and answer every item, even if it is hard to decide which answer is most like you. Do not circle both answers. Circle one answer for each statement. This is not a test so there are no right or wrong answers. Please mark exactly how you really feel inside about school.

1. I always understand everything I read. YES NO
2. My school work is usually untidy. YES NO
3. All new words are easy for me to spell. YES NO
4. I find it hard to understand what I have to do. YES NO
5. I think my school work is really good. YES NO
6. I usually have problems understanding what I read. YES NO
7. I am one of the smartest kids in the class. YES NO
8. I have neat printing. YES NO
9. I usually finish my schoolwork. YES NO
10. I am unhappy with how I read. YES NO
11. I like reading. YES NO
12. My printing is perfect. YES NO
13. I am good at spelling. YES NO
14. I make many mistakes in school. YES NO
15. I have problems in spelling. YES NO
16. I like to read to my parents. YES NO
17. I am happy with the way I spell. YES NO
18. I like making up endings to stories. YES NO
19. My teacher thinks I write poor stories. YES NO

20. I am poor at subtraction. YES NO
21. I like to answer questions. YES NO
22. Working with my hands is hard. YES NO
23. I like doing printing. YES NO
24. I have trouble drawing pictures. YES NO
25. I am poor at silent reading. YES NO
26. I have problems printing neatly. YES NO
27. I am good with my times tables. YES NO
28. I am good at drawing. YES NO
29. When school gets tough I give up. YES NO
30. I like to do story problems. YES NO
31. My friends read better than I do. YES NO
32. I am good at printing. YES NO
33. I always do neat work. YES NO
34. I have difficulty getting my arithmetic finished on time. YES NO
35. I have difficulty working with numbers. YES NO
36. I like spelling. YES NO
37. I like arithmetic. YES NO
38. I am a messy writer. YES NO
39. Tests are easy for me to take. YES NO
40. I like to sound out words. YES NO
41. My teacher often makes me write my work again. YES NO
42. I have difficulty looking up words in the dictionary. YES NO
43. I like to use big words when I talk. YES NO
44. I like telling my friends about school work. YES NO
45. My teacher thinks I am dumb in arithmetic. YES NO
46. I like going to school. YES NO

47. I like playing spelling games. YES NO

48. I have difficulty thinking up good stories. YES NO

49. My spelling is always right. YES NO

50. Saying new words is hard for me. YES NO

51. I am unhappy with how I do arithmetic. YES NO

52. I am a smart kid. YES NO

53. I have difficulty doing what my teacher says. YES NO

54. I find spelling hard. YES NO

55. I usually get my arithmetic right. YES NO

56. I find reading hard. YES NO

57. I am unhappy with my printing. YES NO

58. I am a good reader. YES NO

59. I am slow at spelling. YES NO

60. I am a slow reader. YES NO

61. In school I find new things difficult to learn. YES NO

62. I usually spell words right. YES NO

63. My teacher thinks I am good at printing. YES NO

64. All new words are hard for me to understand. YES NO

65. I have trouble telling others what I mean. YES NO

66. I am good at arithmetic. YES NO

67. I like to tell stories in class. YES NO

68. I feel I often say the wrong things. YES NO

69. I find multiplication fun. YES NO

70. I always get everything in arithmetic right. YES NO

APPENDIX L

The Inferred Self-Concept Scale

Inferred Self-Concept Scale

by E. L. McDaniel, Ph.D

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Los Angeles, California 90025

Information on Child

Name	Ethnic Group	
Date of Birth	Age	Sex
School	Examiner	Date

Supplementary Information (As Desired for Research)

Test Scores

1. Mental Maturity Test (____________________)
Date ____________

	Language	Non-Language	Total
I.Q.			
Standard Score(T)			

2. Achievement Test (____________________)
Date ____________

	Reading (Comprehension)	Arithmetic (Computation)
Raw Score		
Standard Score		
Grade Equivalent		

Classifying Data (Check where appropriate)

☐ Male ☐ Female ☐ Only Child ☐ Oldest Child ☐ Middle Child ☐ Youngest Child

DIRECTIONS

You are asked to describe your perception of a student's self-concept in terms of the following items. Please indicate your rating on each item by circling one of the five numbers at the right of each item.

	Never	Seldom	Sometimes	Usually	Always
1. Enjoys working with others. For example, student may smile, laugh, or look pleased when engaged in productive group activity	1	2	3	4	5
2. Exhibits self-confidence. For example, student initiates activities, goes ahead in work and play without direction	1	2	3	4	5
3. Plays with smaller or younger children. For example, student seeks simple play activities in order to excel or dominate peers	5	4	3	2	1
4. Evidences strong pleasure in good work. For example, student voluntarily redoes poor or sloppy constructions, paperwork, coloring, etc. unless he is satisfied (may smile, chuckle, sigh, look pleased) with his product	1	2	3	4	5
5. Is antagonistic to adults. For example, student talks back, refuses to obey, balks in the presence of adults	5	4	3	2	1
6. Has unrealistic expectations for himself. For example, student sets minor and/or major goals, academically and/or physically, which he is incapable of attaining	5	4	3	2	1
7. Is easily discouraged. For example, student ceases activity when minor failure or mishap occurs	5	4	3	2	1
8. Appears unsociable. For example, student plays and works alone. He may leave setting or activity when others join him	5	4	3	2	1

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		Never	Seldom	Sometimes	Usually	Always
9.	Cries easily. For example, student "puckers up" or tears come to his eyes when he has a mishap, failure, or difficulty with activity (work or play) or with interpersonal relationships	5	4	3	2	1
10.	Is unfriendly to classmates. For example, student works and plays alone. He leaves activity when others appear and refuses (with words or gestures or looks) friendly overtures	5	4	3	2	1
11.	Tries to dominate or bully. For example, student attempts to lead activities even though this is counter to desires of group. He attempts to force his wishes, verbally and/or physically on others	5	4	3	2	1
12.	Fights	5	4	3	2	1
13.	Talks compulsively. For example, student does not await his turn, nor stop talking when his turn is over. He has to "have his say" to peers and adults	5	4	3	2	1
14.	Seems afraid of teacher. For example, student never disagrees with teacher. He does not voluntarily speak up or perform and seems to withdraw physically from any contact with teacher	5	4	3	2	1
15.	Feels he is "picked on" by classmates. For example, student claims others treat him "unfairly." He claims they make him do more "work" (and have less "fun")	5	4	3	2	1
16.	Gives up easily. For example, student meets difficulty or mishap with work or play by ceasing activity	5	4	3	2	1
17.	Is defiant. For example, student rejects criticism. He may do so verbally (sass) and/or nonverbally (tear up work, destroy game, disrupt group activity, fight)	5	4	3	2	1
18.	Thinks he is right. For example, student does not seek verification of his procedures in work or play. He proceeds when his own goal is satisfied	1	2	3	4	5
19.	Is ready to accept blame when at fault. For example, student does not try to shift accusations or rebukes to others for his actions	1	2	3	4	5
20.	Is trusting. For example, student has unquestioning reliance in statements, actions, and justice of others. He is not suspicious of their motives	1	2	3	4	5
21.	Seems to have a "chip" on his shoulder. For example, student misinterprets expressed thoughts, motives, and actions of others in both work and play as being opposed to his best interests	5	4	3	2	1
22.	Is quarrelsome or argumentative. For example, student may taunt others and/or disagree with the statements of others	5	4	3	2	1
23.	Is "oversensitive". For example, student may cry or withdraw or become silent when his statements or actions are questioned	5	4	3	2	1
24.	Provokes hostility from classmates. For example, student may tease others and/or disagree with statements by others. He may do these things verbally or non-verbally	5	4	3	2	1
25.	Thinks his teacher likes him. For example, student acts happy (may smile, work, or play as if contented) when in presence of teacher	1	2	3	4	5
26.	Tattles. For example, student tells teacher of statements and actions which were not intended for teacher to know about	5	4	3	2	1
27.	Is withdrawing. For example, student does not play and/or work with peers	5	4	3	2	1
28.	Is fearful. For example, student backs away or withdraws from routine activities (work and/or play) where he could be hurt, or where he might undergo stress or be embarrassed	5	4	3	2	1
29.	Seems satisfied with level of performance. For example, student does not withdraw from work and/or play situations and appears visibly to be content	1	2	3	4	5
30.	Appears worried. For example, student may have an anxious "look" (i.e., furrowed brow, "cowed" expression)	5	4	3	2	1

TOTAL SCORE = ☐ = ☐ + ☐ + ☐ + ☐ + ☐

APPENDIX M

Beginning Reading I Test Instructions and Criterion Tests

General Instructions and Testing Procedures

General Instructions

The three pretests are given before you begin to tutor. The pretests will provide a measure of the student's reading ability before he is tutored.

The three posttests are given after you have covered all the lessons in the manual or if for some reason you will not be able to continue to tutor the student. The posttests will provide a measure of the student's reading ability following the tutoring.

Preparation

1. Make sure you can correctly pronounce the sounds and nonsense words in the pretests before you administer them. (**Note:** Refer to the pronunciation and sound guides on pages 26, 27, and 28.)
2. Be sure you know the general and specific testing procedures before you test the student. For example, know how to mark the test, know what is considered a correct response, and know what is considered an incorrect response.

Testing Procedures

1. Before you meet with the student, review the directions for scoring each test on page 2.
2. Before you administer a test, ask the student two or three simple questions about pets, hobbies, or special interests.
3. If the student has not yet entered first grade, administer only Part 1 of the first test producing sounds).
4. If he is in the first grade, administer Test 1 and 2 the first time you meet with him. Administer Test 3 the second time you meet with the student.
5. Whether or not you administer all three tests at one time is dependent upon the student's attention span.
6. Make it a point to speak in a friendly voice while you are testing the student.
7. Read the "student directions" to him before each part of the test.
8. As you have a student respond to the items on a test, point to each item with the end of your pencil.
9. Do not tell the student his answer is right or wrong.
10. Mark each item (e.g., *k, th, said, faf*) to which the student responds either correct or incorrect. (**Note:** Make the difference between the marks for correct and incorrect responses clear enough that someone other than yourself can interpret the student's performance).
11. Praise the student generally at the conclusion of each part of the test.

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Scoring

Tests 1 and 3

If the student responds correctly without hesitation (within one second), circle the letter or word (e.g., ⓕ). His response is considered incorrect if he responds in any one of the following ways: (1) responds incorrectly, (2) hesitates longer than one second before responding correctly, or (3) does not respond. If a response is incorrect for any of these reasons, make this mark ○ around the letter or word (e.g., ⓕ). If he hesitates longer than two seconds before responding, mark the item incorrect and go on to the next item and say something like: "Don't worry if you don't know it; let's try the next one."

Test 2

Allow the student two attempts to correctly decode (sound out) a word. In order for a response to be considered correct, the student must blend the sounds in the word without drawing out the word or making a break between the sounds. For example, if the word is *muf*, the student should respond "muf" or "mmmuuu...f; muf" to be considered correct. If on his second attempt he is still drawing out the word, consider it incorrect.

Note: If the student misses eight or more of the nonsense words in any group, discontinue administration of Pretest 2 and proceed to Pretest 3.

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Diagnostic Tests

PRETEST 1 — PART 1: PRODUCING SOUNDS

Consonant Sounds
Student Directions (read to the student): "When I point to a letter, tell me what sound the letter makes. For example, if I point to the letter *z*, make the *zzzzz* sound. If you don't know the sound, say, 'I don't know.' Don't worry if there are some sounds you don't know."

n	f	s	m	r
l	t	p	c	b
g	d	h	k	x
y	j	v	z	w

Short Vowels
Student Directions (read to the student): "When I point to a vowel, you tell me the short sound of that vowel. If you don't know the sound the vowel makes, say, 'I don't know.' Don't worry if there are some sounds you don't know."

a	i	u	e	o

Digraphs and Combinations
Student Directions (read to the student): "When I point to the letters, you tell me what sound the letters make when they are together. If you don't know the sound, say, 'I don't know.' Don't worry if there are some you don't know."

th	sh	ch	wh	qu

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PRETEST 1 — PART 2: BASIC SIGHT WORDS

Student Directions (read to the student): "When I point to a word, read the word out loud. If you don't know a word, say, 'I don't know it.' Don't worry if there are some words you don't know."

I	the	you	is
Is	that	my	see
said	to	are	this
where	there	was	were
they	he	have	could

PRETEST 2: DECODING

Student Directions (read to the student): "The words on this page are not real words; they are what we call nonsense words. I want yo to try to sound out these nonsense words. Don't worry if there are words you can't read; just day, 'I can't read that one,' and go on to the next one."

Note: If the student misses eight or more of the nonsense word in any group, discontinue administration of Pretest 2 and proceed to Pretest 3.

Group 1

luf	heg	jit	wex	dap	vin
sab	kem	riz	nuc	yeg	bot

Group 2

chut	quem	shof	whing	zath
shink	nesh	thang	whub	fick

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Group 3

slef
stath
brum
clack
blun
plonk
stum
grash
fleb
dring

Group 4

pent
thand
rell
shust
fest
chast
nill
zist
melp
bint

Group 5

strant
prant
spint
shuft
tremp
twest
smill
frush
sprish
plunt

Group 6

branlemming
whumfan
fladstill
plonslam
clunshet
mokling
drezquit
chelprib
thexcon

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Posttests

POSTTEST 1: PRODUCING SOUNDS

Consonant Sounds

Student Directions (read to the student): "When I point to a letter, tell me what sound the letter makes. For example, if I point to the letter *z*, make the *zzzzz* sound. If you don't know the sound, say, 'I don't know,' Don't worry if there are some sounds you don't know."

n	f	s	m	r
l	t	p	c	b
g	d	h	k	x
y	j	v	z	w

Short Vowels

Student Directions (read to the student): "When I point to a vowel, you tell me the short sound of that vowel. If you don't know the sound the vowel makes, say, 'I don't know.' Don't worry if there are some sounds you don't know."

a	i	u	e	o

Digraphs and Combinations

Student Directions (read to the student): "When I point to the letters, you tell me what sound the letters make when they are together. If you don't know the sound, say, 'I don't know.' Don't worry if there are some you don't know."

th	sh	ch	wh	qu

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POSTTEST 2: DECODING

Student Directions (read to the student): "The words on this page are not real words; they are what we call nonsense words. I want you to attempt to sound out these nonsense words. Don't worry if there are words you can't read; simply say, 'I can't read that one ' and go on to the next one."

Group 1

fum	hig	tam	wep
dat	nov	sak	leb
viz	cug	yop	bit

Group 2

chink	quof	shan	whick	zosh
shem	thut	vang	nath	ming

Group 3

slank	trum	spash	gleb	fring
plef	stog	grum	flam	drun

Group 4

nant	pand	zell	fust	shest
gast	rill	tist	dulp	sont

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Group 5

smull spant brelp plash triss
clost grift flust stent glond

Group 6

bluntling drizshat chapthim
tradstill flamplont frobchant
thexprum yebstend brunting

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POSTTEST 3: SIGHT WORDS

Student Directions (read to the student): "When I point to a word, you read the word out loud. For example, if I point to this word (point to *was*), you say, 'was.' If you don't know a word, say, 'I don't know it.' Don't worry if there are words you don't know."

I
is
my
to
there
they
could
any
be
came
do
fly
from
go
day

this
Is
see
are
was
he
you
busy
blue
come
down
for
funny
goes
of

the
that
said
where
were
have
all
away
by
does
five
four
give
easy
good

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POSTTEST 2—SIGHT WORDS (Continued)

has	here	his
how	into	like
little	long	look
her	me	no
now	once	our
idea	or	among
play	pretty	read
saw	say	she
so	take	too
two	very	walk
we	what	who
your	about	after
again	always	around
ate	been	because
before	both	brown
buy	carry	clean
cold	done	don't

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POSTTEST 2—SIGHT WORDS (Continued)

draw	eat	eight
every	fall	far
first	found	full
gave	those	three
going	green	grow
hold	hurt	keep
kind	know	laugh
light	live	made
make	many	many
much	myself	new
off	old	one
only	open	out
over	own	please
pull	right	round
ride	seven	shall
show	sleep	some
soon	their	these

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POSTTEST 2—SIGHT WORDS (Continued)

today
upon
wash
work
write
put
another
between
while
enough
word
even
name
second
begun
story
change
looked

try
use
why
would
yours
people
should
Mrs.
might
since
either
place
picture
house
almost
sure
few
large

together
warm
white
yellow
ours
through
different
Mr.
thought
answer
same
number
sentence
above
page
knew
become
open

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APPENDIX N

Summary of Normative Data for Self-Esteem Instruments

Summary of Normative Data for Self-Esteem Instruments

The Piers-Harris Children's Self-Concept Scale was normed in the Pennsylvania Public Schools with 1183 students. The mean of the normative sample was 51.84 and the standard deviation was 13.87. Reliability data indicate that coefficients of equal difficulty of items range from .78 to .93. An application of the Spearman-Brown odd-even formula resulted in reliability coefficients of .90 and .87, respectively. Stability was determined by retesting fifth grade students after a four month period. The four month test-retest coefficient was .77, giving the Piers-Harris Children's Self-Concept Scale internal consistency and temporal stability (Piers, 1969).

Content validity was designed into the scale by defining the domain to be measured as the areas about which children reported qualities they most liked and disliked about themselves. Using an item analysis, non-discriminating items were dropped from the scale A speciman copy of this instrument of found in Appendix B.

Normative data for The Students' Perception of Ability Scale (SPAS) were collected from 642 deviation of 11.71, and a standard error of measurement of 4.77. Subscale scores with the exception of Confidence, vary from 91.17 to 7.89 for means, from 3.01 to 2.78 for standard deviations, and from 1.51 to 1.31 for standard errors of measurement. For the ten-item Confidence subscale, the mean was 4.21, the standard deviation 2.25, and the standard error of measurement 1.14.

Estimates of internal consistence were determined by Cronback's alpha for children in Grades 2 through 6. The average Full Scale alpha was .915, whereas Arithmetic, Reading/Spelling, and Penmanship/Neatness estimates were between .822 and .855. For General Ability, the alpha was .785, School Satisfaction was .741, and Confidence .686. Considered together, these coefficients indicate that items within individual subscales are relatively homogenous, and that all items pooled together appear to be measuring a common domain.

Test-retest reliability data were collected from 603 students over a four to six week interval. The stability coefficient for the Full SPAS was .834, whereas subscale values ranged from .714 to .824. The most stable and internally consistent subscale is Reading/Spelling. These test-retest data indicate that academic self-concept is, as measured by the SPAS, a relatively stable construct over time. In an effort to establish discriminant validity and to support the idea that the SPAS measures academic self-concept distinct from general self-concept, scores on the Piers-Harris scale were correlated with the SPAS for 622 children. Correlation coefficients between the SPAS and the Piers-Harris scale ranged from -.029 to .078, with none being significant at the .05 level. These data indicate that the two scales are measuring two distinct domains, and are supportive of the idea that academic self-concept (Chapman and Boersma, 1979).

Internal consistency of The Inferred Self-Concept Scale was examined by using a split-half reliability coefficients between the sum of the 15 even numbered items and the sum of 15 odd numbered items for 1) counselors, 2) teachers, and for

3) counselors-teachers combined. The obtained correlation coefficients were, respectively, .8614, .8567, and .9026. These correlations indicate that this instrument is internally consistent and that items do achieve a satisfactory degree of homogeneity.

The test-retest reliability was established with 180 subjects over a six-month period. The overall test-retest reliability coefficient for the Inferred Self-Concept Scale is .66, which is significant beyond the .01 level. These finding suggest that the same attribute has been measured and that the students have changed very little in status within the sample on the variable measured (McDaniel, 1973).

APPENDIX O

Information Letters and Parental Consent Forms

Dear Parent:

Your child, ______________________________________, has been selected for participation in a special peer-tutoring research project at our school.

This will involve your child in receiving special training in reading skills and techniques for tutoring younger children. Your child will then tutor a younger student with reading difficulties about fifteen minutes three times a week.

We believe that participation in this special tutoring program will bring great benefits not only to those students receiving the tutoring, but also to your child who will serve as a tutor. We expect these benefits to include improved reading ability and interpersonal relationships.

It is important that we receive your permission before your child can participate in this research project. Enclosed is a parental permission form to be filled out, signed and returned to your child's teacher before ____________________. If you do not approve of your child's participation in the program please contact us before that date. If we do not hear from you before that date, we will assume that you grant permission and we will allow your child to participate.

We appreciate your prompt consideration of this matter and look forward to a great experience. If you have questions or concerns about this project, please feel free to contact either your child's principal or teacher.

Thank you,

January 23, 1984

Dear Parent:

Your child has been selected for participation in a special research project that is being conducted at our school. The purpose of the research project is to find ways to improve the reading skills of elementary school students.

Your child's participation in this project will involve being tested in reading skills. These tests will occur at least twice during the remainder of the year.

It is important that we receive your permission before your child can participate in this project. Enclosed is a parental permission form to be filled out, signed and returned to your child's teacher by . If you do not approve of your child being tested as a part of this project, please contact us before that date. If we do not hear from you before that date, we will assume that you grant permission.

We appreciate your prompt consideration of this matter and look forward to a great experience with this project. If you have any questions or concerns about this project, please feel free to contact either your child's teacher or the principal.

Thank You

Enclosure

____
Date

INFORMED CONSENT SPECIAL EDUCATION CHILDREN AS TUTORS PROJECT

I hereby give consent to have my child, ________________________________, participate in these activities of the special education children as tutors research project. The project has been explained completely to me. I understand that my child will be serving as a tutor (or tutee) of another child in the area of reading. I further understand that my child will be using project supplied materials and will be properly supervised.

I understand that I may withdraw my child from the study at any time if I so desire.

____
Signature

____
Witness

APPENDIX P

Parent and Teacher Structured Interview Schedules

"HANDICAPPED CHILDREN AS TUTORS PROJECT"

Parental Interview

Name ______________________________ Phone ____________________

Student's Name ______________________ Date Interviewed ____________

School ____________________________ Class ____________________

1. a. Did your child mention anything to you about the tutoring program that he/she was participating in? yes____ no____

   b. What types of things did your child say about the program?

   c. How would you describe your child's feelings about this tutoring program?

   very positive____ positive____ negative____ very negative____

   no opinion____

   d. How would you describe your feelings as a parent about your child's participation in this tutoring program?

   very positive____ positive____ negative____ very negative____

   no opinion____

2. a. Based on anything you noticed about your child, do you feel that this tutoring program had any effects on your child in the following ways:

Types of Effects	Yes	No
Reading Ability	____	____
How he/she feels about himself (self-esteem)	____	____
Relating to other kids & people (social interaction)	____	____

   If yes, give specific examples:

   b. Has the amount of reading your child does at home:

   increased____ decreased____ stayed the same____

3. Did you do anything at home to supplement or reinforce reading or the skills being taught and practiced by the tutoring program?

   yes_____ no_____

   If yes, what types of things did you do?

   How much time did you spend reading with him/her during the tutoring program?

4. a. Would you like to see this tutoring program continued in the schools?

      yes_____ no_____

   b. Would you like to see your child participate in this program again next year?

      yes_____ no_____

5. Recommendations: What would you recommend we do differently in the future to make this tutoring program more successful?

"HANDICAPPED CHILDREN AS TUTORS PROJECT"

1st Grade Teacher Interview

Name ______________________________ School _________________________

Date Interviewed ____________________

1. Briefly, but specifically, explain your schedule of class instruction (give examples of work that students are doing).

2. Did any of the children in your class who were identified as having reading difficulties, but who were NOT tutored, receive any additional reading help in class?

   Yes_____ No_____

   If yes, what kinds of extra reading helps were used?

3. Describe the instructional methods that you use in your class to teach reading skills (i.e., phonics, etc.)?

4. a. How would you describe how your students who have participated in the tutoring generally feel about the program?

very positive_____ positive_____ negative_____ very negative_____

no opinion_____

What kinds of comments have you heard any of your students make about the tutoring program?

b. How would you describe your own personal feelings, as a teacher, about the tutoring program?

very positive_____ positive_____ negative_____ very negative_____

don't know/no opinion_____

5. a. Based on your observations, has this tutoring program had effects on:

1st Graders yes_____ no_____ Don't know_____
Handicapped tutors yes_____ no_____ Don't know_____

b. If yes, what types of effects (negative or positive) have you observed as a result of the tutoring program?

1st Graders:

Handicapped tutors:

6. What do you consider to be the primary STRENGTHS and WEAKNESSES of this tutoring program?

STRENGTHS:

WEAKNESSES:

7. a. Would you like to see this type of a tutoring program continued and/or expanded in the schools in the future?

yes_____ no_____

Why or why not?

b. Would you like to have children from your class next year participate in this tutoring program?

yes_____ no_____

Why or why not?

8. Recommendations: What would your recommend that we do differently in the future to make this tutoring program more successful?

"HANDICAPPED CHILDREN AS TUTORS PROJECT"

Special Education Teacher Interview

Name ______________________________ School __________________________

Date Interviewed ___________________

1. a. How would you describe how your students who have participated in the tutoring generally feel about the program?

very positive____ positive____ negative____ very negative____

no opinion____

What kinds of comments have you heard any of your students make about the tutoring program?

b. How would you describe your own personal feelings, as a teacher, about the tutoring program?

very positive____ positive____ negative____ very negative____

don't know/no opinion____

2. a. Based on your observations, has this tutoring program had effects on:

1st Graders	yes____	no____	Don't know____
Handicapped tutors	yes____	no____	Don't know____

b. If yes, what types of effects (negative or positive) have you observed as a result of the tutoring program?

1st Graders:

Handicapped tutors:

3. What do you consider to be the primary STRENGTHS and WEAKNESSES of this tutoring program?

STRENGTHS:

WEAKNESSES:

4. a. Would you like to see this type of a tutoring program continued and/or expanded in the schools in the future?

yes_____ no_____

Why or why not?

b. Would you like to have children from your class next year participate in this tutoring program?

yes_____ no_____

Why or why not?

5. Recommendations: What would you recommend that we do differently in the future to make this tutoring program more successful?

APPENDIX Q

Literature Review

Tutoring Interventions with Learning Disabled Students: A Critical Review[1]

Thomas E. Scruggs and Lori Richter

Utah State University

Running head: LD TUTORS

Abstract

Twenty-four empirical investigations of tutoring interventions were evaluated in order to determine the nature of actual data regarding such interventions. Although all authors clearly favored the use of such interventions, equivocal results were reported. Particularly weak were substantiated reports of social benefits to tutors or tutees. Methodological problems associated with such research in field settings are discussed, and implications for future research are given.

Tutoring Intervention with Learning Disabled Students:
A Critical Review

Although the concept of peer tutoring in education is not new (Allen, 1976), there has recently been a surge of interest generated in the utility of employing schoolchildren as tutors of other children (Devin-Sheehan, Feldman, & Allen, 1976a). Many potential benefits have been described regarding such interventions.

The most obvious potential benefit of tutoring is the individualization it can afford to learners of differing needs (Harrison, 1976). To this extent, teachers can provide for students' individual needs without sacrificing the learning of others in the class. It may be argued, on the other hand, that schoolchildren, enrolled to study and not to teach, may lose valuable learning time involved in activities for which the teacher, not the student, had been hired. Some have replied to this argument that tutors often are reported to gain as much as, or more than, the student being tutored (Hassinger & Via, 1969; McWhorter & Levy, 1971). In addition, such tutoring is thought to develop responsibility (Allen, 1976b), social skills (Argyle, 1976), self-esteem (Strodtbeck, Ronchi, & Hansell, 1976), and improve attitude toward school (Feldman, Devin-Sheehan, & Allen, 1976). Harris and Aldridge (1983) have argued that tutoring (a) allows the teacher to move ahead with instruction with those who are ready for it, (b) forces the less able student to share responsibility for his or her own learning, and (c) fosters cooperation, empathy, and understanding among students involved in tutoring activities.

Such benefits would appear to be ideally suited to children identified as learning disabled (LD). Cristoplos (1974) considered peer tutoring to be a critical condition of mainstreaming such children into regular classes. He maintained that peer tutoring could (a) alleviate pressure on teacher time, (b) allow LD children to work in one to one relationships, and (c) could help develop cooperative attitudes and mutual self-respect among students. Watts and Cushion (1982) argued that, given adequate preparation, supervision, and follow-up, the use of peer tutoring could enhance the self-concept of LD adolescents. Gerber and Kauffman (1981), in the most thorough review of tutoring in special education settings to date, concluded, "peer tutoring is a technique that may provide educational benefits to both the tutor and the tutee" (p. 182).

Given such outcomes, peer tutoring interventions would seem ideally suited for children exhibiting learning disabilities (LD). As tutees, they could be provided with much-needed individual attention. As tutors, they could gain social skills, responsibility, and self-esteem so commonly reported to be lacking in this population (e.g., Bryan & Bryan, 1981). Clearly, the claims of tutoring benefits for learning disabled children are encouraging. But what evidence is there that tutoring is so effective with LD students? Although several investigations have been conducted, no review of these findings has yet been completed. In addition, major reviews of peer tutoring have intentionally omitted discussion of such interventions with handicapped children (Devin-Sheehan, Feldman, & Allen, 1976). Although Gerber and Kauffman (1981) described a wide range of tutoring studies, they directly referred to only four interventions involving LD students. The purpose of the following investigation, then, was to locate as many studies as possible which included LD children in tutoring interventions and synthesize findings of these interventions. Through these methods, it was hoped that some light could be shed on the realities of peer tutoring with LD students.

Procedure

Several procedures were used to locate as many studies as possible which investigated the use of LD children in tutoring interventions. The subject area was first limited to investigations which employed LD students in actual pedagogical interventions with peers. Use of peers in delivering reinforcers, or as behavioral models, therefore, were excluded from this investigation. In addition, students must have been described as "learning disabled", "reading disabled", or have been described as functioning at least two years below grade level without mention of accompanying deficit in ability.

Studies were located by first conducting a computer-assisted search of Dissertation Abstracts, Psychological Abstracts, and Educational Resources Information Center (ERIC) data bases. Studies found in this manner were examined to determine whether they contained references to other suitable articles. Previous works on tutoring (e.g., Allen, 1976; Strain, 1981) were also examined for additional studies. Through these procedures, twenty-four empirical studies of the effects of tutoring interventions on academic and/or social performance of LD students were located.

Each study was coded for several variables, including descriptions of tutors and tutees, research design, level of intervention, comparison groups, procedures, and results, and is given in Table 1. Interrater consistency was achieved by having two independent raters evaluate each article and resolve any disagreements by discussion.

Insert Table 1 about here

Results and Discussion

Descriptions of each tutoring investigation are given in Table 1. As can be seen, a wide variety of tutoring interventions and evaluations were employed: eleven employed LD or reading disabled students as tutors, while 13 did not; most (14) used reading as a subject area, but others used spelling (2), math (5), or library skills (1). Although nearly all studies (20) directly assessed possible academic benefits to tutees, many other variables were assessed, including academic benefits to tutors (9) and social benefits to tutors (5) as well as tutees (5). Social benefits examined included on-task behavior, self-concept, attitudes towards school, cooperation, and social behavior.

Variable also was the type of research designs employed. While a number of different designs could be considered satisfactory, each would tend to address a different type of question. Pre-post designs (in which the experimenter tests one group of students immediately prior to and following tutoring interventions) can be used to document gains made by students during the intervention, but may say little about other possible contemporaneous sources of learning or relative effectiveness of other competing instructional strategies. Studies employing a no-treatment control group are able to account for contemporaneous sources of learning, but, if control group activities are not clearly documented, these studies cannot allow for a comparison of possible competing instructional strategies. For example, Mellberg (1981) found greater academic gain for tutors than for students in a no-treatment control group. The addition of a no-treatment control group helps demonstrate that the academic gain would not have occurred without the tutoring program. However, since the corresponding activities of the no-treatment group were not clearly specified, it is not certain how the tutoring intervention may have compared with a specific alternative learning strategy. Only those studies which specified control group treatments allow such a comparison. For example, Epstein (1978) compared the effects of a peer tutoring condition in reading with four different control conditions: peer tutoring math, self-instructional, teacher-instructed, and no treatment control. Such comparisons, if carefully documented, could provide much information on the relative effectiveness of peer tutoring. However, it can be stated that group designs are well suited for evaluating the general effects of competing instructional strategies (including peer tutoring), while single subject designs are well suited for documenting specific details of individual learner performance under different conditions (including peer tutoring). Results of these different types of investigations are given below.

Pre-post Designs

Seven investigations employed pre-post group designs, and one employed a single-subject AB design. All of these reported that the tutoring had been successful in increasing academic performance. Four (Jones, 1981; Landrum, 1970; Lane, Pollack, &

Sher, 1972; Willis, Morris, & Crowder, 1972) compared observed achievement with an estimation of "expected" achievement, and reported in all cases that measured achievement levels surpassed those that would have been estimated based upon previous learning. Three of the four employed tutors with learning or behavior disorders, and all reported gains for tutors as well as tutees. The single subject pre-post design (Mandoli, Mandoli, & McLaughlin, 1982) reported increased spelling performance as a result of peer tutoring. The remaining three pre-post group designs (Csapo, 1975; Price & Dequine, 1980; Weiner, Goldman, Leo, Toledano, & Rosner, 1974) simply reported that positive changes had occurred[2].

Of the seven group investigations, five reported that tutors or tutees had benefited socially or emotionally. Among gains reported were fewer delinquencies, improvement in attitude toward school, cooperation, self-esteem, greater motivation, fewer anti-social acts, and exhibition of less hostility toward authority figures. None of these findings, however, were supported empirically. Although some of these variables may be difficult to quantify, empirical evidence supporting these particular benefits is necessary before these commonly reported benefits of tutoring can be completely accepted.

Nor can the findings of the above studies be regarded as conclusive with respect to academic gains. The argument of many that observed gains exceeded expectations provides some evidence for the effectiveness of tutoring prgrams but is far from conclusive. Such evidence may be confounded with other educational treatments being undertaken concurrently. The fact that all of the investigators who directly compared actual with expected performance reported that students in tutoring interventions had achieved ahead of expectations does lend weight to the claims of tutoring benefits. An examination of other types of designs, however, would give more credibility to these claims.

Experimental Designs

Studies employing a no-treatment control group. Eight of the studies reviewed employed group designs in which the control group activities were not clearly identified. This design is more powerful than the pre-post design in that it controls for concurrent variables in the school experience which could explain part or all of the gains attributable to tutoring in the latter design. For example, students' academic gains attributable to tutoring in a pre-post design may have in fact reflected a new teacher or principal that year. The use of a no-treatment control group allows researchers to make comparisons between gains due to tutoring interventions and gains which were realized in a group which was not involved in tutoring. On many occasions, the exact alternative activities are not specified, not completely known, or perhaps the control subjects were separately involved in many different activities which would resist careful documentation. This latter case may emerge in special education tutoring research in which the usually small number of special education students necessitates the involvement of experimental students under the type of scheduling constraints which often characterize special education programming. The presumption in this case is that students in control conditions received an equivalent amount of instructional time as typically delivered in that particular school, and any gains attributable to tutoring reflect an improvement over that particular school's general program. If, in fact, tutors were involved during non-academic periods of the day (e.g., lunch, recess), the independent variable may be nothing more than time-on-task. The weakness of such a design is that the relative worth of tutoring compared with specific rival instructional strategies remains uncertain.

All seven of the no-treatment control group studies reported that the tutoring intervention had been successful in some way. Unfortunately, only three (Mellberg, 1981; Singh, 1982; Wingert, 1981) of the seven offered evidence that these performance gains were "statistically significant" (i.e., the differences exceeded those expected by sampling error). All the reported significant effects were found in academic areas and involved secondary-aged tutors tutoring younger LD children. Although several investigations reported social benefits, none offered statistical documentation.

The studies which employed no-treatment control groups offer some evidence that tutoring can result in positive academic effects for tutors and tutees. Without specification of control group activities, however, it is difficult to determine the precise effects of tutoring other than in some cases it apparently is a positive supplement to regular instructional programming. In order to further refine the effects of tutoring interventions, use of specific competing instructional strategies is necessary.

Research designs in which alternative instructional activities are specified. Six of the total 24 tutoring investigations involved groups of tutoring pairs and compared the performance of these pairs with groups of students involved in alternative instructional activities. Of these six, three (Kane & Alley, 1980; McCracken, 1979; Sindelar, 1982) failed to demonstrate that tutoring produced learning superior to alternative instructional conditions. Kane and Alley (1980) compared peer tutorial instruction with teacher-led instruction and found no statistically significant differences between the two conditions. McCracken (1979) compared peer tutorial instruction with teacher-led instruction and found no significant difference between the two (although an effect for data-based vs. non-data-based instruction was found). Sindelar (1982) compared three tutorial procedures with each other and with teacher-led small group instruction. His "hypothesis/test" tutorial group scored significantly higher on a cloze reading comprehension measure than a "word reading" tutorial group, but not higher than small group instruction. No differences were found between groups on measures of word reading, oral reading, or a standardized measure of reading comprehension.

In spite of the lack of positive findings, the authors remained optimistic about the value of peer tutoring with LD students. Sindelar asserted, "the evidence supporting the use of cross-age tutoring as a means of providing supplemental instruction continues to grow" (1982, p. 205). McCracken (1979) and Kane and Alley (1980), acknowledging non-significant differences between tutoring and non-tutoring groups, relied upon pre-post data to maintain that tutors and teacher-instructed groups had both made progress in reading. Unfortunately, such pre-post results are subject to validity threats outlined above. Also, it should be pointed out that a finding of non-significant differences should not be interpreted to mean that both treatments were equally effective. When two treatments are not found to differ significantly, hypotheses other than "equal" are possible; for example, that neither treatment exerted a tangible effect on the dependent measure. Another possibility is that the experimental design lacked sufficient power to detect real differences. At best, a finding of non-significant differences means any possible differences between groups was not observed.

In spite of the above equivocal findings, however, three investigations which compared tutoring with specific alternative strategies indicated that tutoring had been more effective. King (1982) employed high achieving 6th graders tutoring LD classmates in social studies content. Compared with students studying independently, LD tutees scored higher on a class examination. Lamport (1982) involved 6th grade LD students as tutors of younger remedial reading or LD students and reported that tutors and tutees alike had gained in reading skills and school attitudes as compared with a teacher-instructed control group attending remedial reading classes or learning disabilities classes. Epstein (1978) employed LD primary-level tutors tutoring each other in reading. In this study, four control groups were employed: (a) peer tutoring in math (apparently to control for the effects of tutoring group per se), (b) teacher-instructed, (c) self-instructed, or (d) control who received no treatment other than the normally assigned reading program. Epstein reported that the reading tutoring group performed significantly better than all control groups on a criterion measure of reading. Epstein concluded that it was important for the tutors to have a thorough knowledge of the content being tutored.

In addition to the above group designs, two studies have involved single subject methodology to compare instructional strategies, including tutoring, as a within-subject variable (Higgins, 1982; Jenkins, Mayhall, Peshka, & Jenkins, 1974). Both reported that the tutoring intervention had been successful, although the LD students in Higgins' investigation did not appear to learn more under tutoring conditions than they had learned by free study. Jenkins et al. employed a multiple treatment design and concluded that in each of several experiments, students had learned more in tutoring sessions than in teacher-led groups. In the Jenkins et al. investigation, older, non-handicapped children served as tutors. This investigation supported the notion that individual tutoring results in learning superior to small group teacher-led instruction. Higgins' investigations, on the other hand, did not support the notion that learning disabled students can learn more by tutoring each other than they can by independent study.

Conclusion

The findings of contemporary researchers in the area of tutoring interventions involving LD students have provided important information for future researchers and practitioners. Many questions, however, remain unanswered. Although much of the published research has indicated LD children can and do learn in tutoring situations, specific circumstances under which tutoring is most effective are still not completely known. Whether tutoring is better for LD students in the capacity of tutor vs. tutee has not been established. Whether tutoring can be more profitably employed in specific skills tasks (e.g., multiplication facts) or as general supplements to curricular programs (e.g., basal reading) has yet to be determined. Also, specific instructional techniques found to be less effective than tutoring interventions have yet to be identified. It would be important to know, for example, whether a special education teacher could more profitably use his or her time teaching spelling words in small groups using direct instruction and choral responding, or whether monitoring tutor pairs drilling each other, or perhaps some combination, is most effective. Although some studies have addressed alternative instructional strategies, the precise components of these strategies have not always been clearly specified, and the question "better than what?" remains unanswered.

Finally, the social benefits to be derived from tutoring interventions with LD students remain to be documented. Although anecdotal reports abound, clear documentation that tutoring can improve attendance, attitudes toward school, socialization, and self-esteem is simply not available. Specific social benefits for LD tutors and tutees remain to be established.

In spite of the fact that benefits of tutoring interventions with LD students are as yet equivocal, two important points are worth noting. First, tutoring research is most often employed as a pragmatic intervention in a real world (school) setting. As such, this research is rich in ecological validity but subject to much of the same experimental validity threats common to program evaluations. To this extent, the research has not been poorly conducted as much as subject to interpretative difficulties which commonly arise when large-scale interventions are attempted in a real school setting. These same methodological difficulties have been encountered in studies involving non-disabled students (Feldman, Devin-Sheehan, & Allen, 1976).

The second point worth noting is that apparently all professionals who write about tutoring interventions in learning disabilities research appear equally convinced of the merits of such interventions, regardless of whether their particular studies provided empirical support for such merits. In fact, it seems difficult to imagine another instructional intervention in the complex field of learning disabilities which meets with such unqualified enthusiasm and yet for which research is so incomplete. It must also be stated that the present authors have also encountered both the methodological challenge and the conviction that peer tutoring is an intervention of great power and utility in special education (Osguthorpe, Scruggs, & White, 1983). Only through further research can this complex issue be finally clarified.

Ref: DISK8-TOM/MANUS-LD/TUTORS

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Footnote

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[2] Gerber and Kauffmann (1981), in fact, indicate that the Weiner et al. (1974) project, after initial successes, appears to have "eventually disintegrated" (p. 179).

Table 1

Articles Included in this Review

BEST COPY AVAILABLE

REFERENCE	TYPE OF DESIGN	SUBJECT AREAS	DESCRIPTION OF TUTORS	DESCRIPTION OF TUTEES	LEVEL OF INTER-VENTION	COMPARISON GROUP	PROCEDURES	REPORTED RESULTS
Balmer, 1972	Experimental, Group	Various subjects including reading, pre-vocational arts	4th, 5th, and 6th graders, 2 years behind academically, aggressive or withdrawn.	Younger special education students in self-contained classroom.	Daily for 6 months, including 2 month training period	No treatment control	Tutors came to special education classroom to help tutees with assignments and class projects. No measurements were reported. Control group was mentioned but not described.	Anecdotal; 5th and 6th graders improved more than 4th graders in school and social behavior. Play on the playgroud was "friendlier". Tutees felt more accepted.
Csapo, 1975	Pre-post	Reading	Adolescents on probation, reading levels 3 to 5 years behind age-grade expectancy level, ages 13-15, n=6	Reading levels at least 2 years behind age-grade expectancy level ages 8-9, n=8	Daily, 10 weeks	None	Tutors were paid to teach reading to younger children during summer school. Pre- and post-tests in reading were administered to tutors and tutees. Data was collected on several tutor behaviors.	Tutors and tutees improved on reading achievement tests and showed an increase in number of words read per minute. Tutors made more positive remarks, were involved in fewer delinquencies, and came home earlier at night.
Dequin and Smith, 1980	Experimental, Group	Library skills (using card catalogs, running projectors, etc)	4th, 5th, and 6th graders, LD n=12	2nd graders, nonhandicapped, n=12	2 to 4 times per week	No treatment control	Tutors received 15 training sessions and met with tutees as soon as they had mastered each skill. Tests were administered at the beginning of the study ("pretests"), after the final tutoring session ("midtests"), and 2 weeks later ("post-tests").	Mean test scores remained almost constant across the 3 administrations for control group. Mid-test scores increased for tutors and tutees over pretest scores. Increase was greater for tutees. Posttest scores were lower than midtest scores, especially for tutors. Posttest scores were lower for tutors than for tutees.
Epstein, 1978	Experimental, Group	Reading	LD in self-contained class-rooms, n=100	LD in self-contained class-rooms, primary level, n=100	15 min. daily, 1st half of academic year	1. peer tutoring meth 2. teacher-instructed 3. self-instructed 4. blind control	Students scoring low on word recognition test were tutors. Tutees were randomly assigned to experimental and control conditions.	1. Experimental group performed significantly better than control groups on criterion-referenced test. 2. Experimental group covered more words than control group 3 but not control group 2. 3. There were no significant differences between the groups on time used to cover the words.

(table continues)

REFERENCE	TYPE OF DESIGN	SUBJECT AREAS	DESCRIPTION OF TUTORS	DESCRIPTION OF TUTEES	LEVEL OF INTERVENTION	COMPARISON GROUP	PROCEDURES	REPORTED RESULTS
Haisley, Tell and Andrews, 1981	Experimental, Group	Subject area varied, time-at-task was dependent measure	9th graders, academically and socially outstanding, n=14	Mainstreamed 8th and 9th graders, n=13	18 weeks to academic year	No treatment control (5 controls per tutee)	Pre- and post-intervention data on attending behavior were recorded	"Tutees' mean at task behavior equalled or surpassed that of the control group"
Higgins, 1982	Single subject, alternating treatment design	Spelling	LD in self-contained classrooms alternated as tutors and tutees, n=8		2 weeks	3 treatments: (1) peer tutoring; (2) independent study; (3) no remediation control	Both interventions used team learning technique called "Student Team Achievement Divisions"	Both interventions were significantly better than control condition in increasing spelling performance. There were no differences in the tutoring condition as compared to the independent study condition. Serving as tutee resulted in significantly better spelling performance than did serving as tutor.
Jenkins, Mayhall, Peschka, and Jenkins, 1974	Single subject, multiple treatments design	(1) Word recognition; (2) Spelling; (3) Multiplication	Older, nonhandicapped children	(1) LD and EMR, ages 7-10, n=13; (2) 3rd graders, LD, n=4; (3) 4th graders referred to resource room for assistance in multiplication, n=5	2 10-min. sessions daily (1) 4 to 8 days; (2) 4 days; (3) 5 days	Teacher-instructed small groups	Each child was involved in daily sessions under both one-to-one cross-age tutoring and small group conditions. Students were tested after each session	In each study, children made greater gains in tutorial condition.
Jones, 1981	Pre-post	Reading	Students (usually former tutees) at least 2 years ahead of tutees in reading	6th and 7th graders scoring 2 or more years below grade level on Gates McGinitie Reading Test	45 min. per days, 4 days per week	None	Gates McGinitie pre- and posttest scores were analyzed for tutors and tutees. Interviews, questionnaires and surveys were also used	Tutees and tutors made significant reading gains over expected gains. Anecdotal improvements in self-concepts, attitudes toward school, attendance, cooperation and self-confidence were also reported.

(table continues)

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REFERENCE	TYPE OF DESIGN	SUBJECT AREAS	DESCRIPTION OF TUTORS	DESCRIPTION OF TUTEES	LEVEL OF INTER-VENTION	COMPARISON GROUP	PROCEDURES	REPORTED RESULTS
Kane and Alley 1980	Experimental, Group	Math	Nonhandicapped students residing in minimum security correctional institutions, ages 15-17	LD residing in minimum security correctional institution, ages 12-17, n=38	daily, 8 weeks	Teacher-instructed group	Each math class (which was composed of LD and nonhandicapped students) had two tutors who worked as instructional delivery agents. Peer tutor to LD student ratio was 1 to 1 or 1 to 2	There were no significant differences in achievement test scores between peer-tutored and teacher-instructed groups.
King, 1982	Experimental, Group	Social studies	6th graders (classmates of tutees) above grade level	6th graders, LD (major area of disability was reading) n=20	30 min. 7 days	Independent study	Tutor/tutee pairs worked in resource room locating in textbook and learning the answers to 60 social studies questions.	Tutored students scored significantly higher on class examination than control group.
Lamport, 1982	Experimental, Group	Reading	6th graders, reading disabled, n=24	Elementary school students in remedial reading or LD class	30 min., 3 days per week, 8 weeks	Control group attended remedial reading class	Pre- and post-treatment measures were taken on auditory vocabulary, phonetic analysis skills, reading comprehension, classroom disturbance behaviors, withdrawn-inattentive behaviors and reactions toward school	Tutors achieved significantly higher scores in phonetics analysis skills and more positive reactions toward school than control Ss. Tutees achieved higher scores in auditory vocabulary and more positive reactions to school than students in their control groups.
Landrum and Martin, 1970	Pre-post	Reading	high school students with reading scores 2 years or more below grade placement, dropouts or excessive absenteeism, low family income, n=100	4th, 5th, and 6th graders, reading disabled	2 hours per day, 6 weeks	None	Tutors were paid to work with tutees during summer school	Tutors gained 8.3 months in reading. Tutees gained 4.7 months.

(table continues)

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REFERENCE	TYPE OF DESIGN	SUBJECT AREAS	DESCRIPTION OF TUTORS	DESCRIPTION OF TUTEES	LEVEL OF INTERVENTION	COMPARISON GROUP	PROCEDURES	REPORTED RESULTS
Lane, Pollack, and Sher, 1972	Pre-post	Reading	8th and 9th graders with "maladaptive behavior" according to the Burk's Behavior Rating Scale, n=8	3rd and 4th grade patients at community health center, referred for learning or behavior problems, n=8	2 days per week, 7 months	None	Pre- and posttest scores of Metropolitan Achievement Test were analyzed	Tutors gained 19 months and tutees 14 months on reading scores. Teacher ratings of tutor behavior improved. Reported changes included greater motivation to achieve in class, less hostility toward authority figures, exhibition of more mature and goal-oriented behavior, fewer antisocial acts in school.
McCracken, 1979	Experimental, Group	Reading	Secondary level, nonhandicapped, n=15	Secondary level in special education resource program, n=51	Daily, 12 weeks	Teacher-instructed	Tutees were tutored daily either by teacher or peer tutors, with half of the Ss using data-based instruction which involved daily self-charting of progress (Subjects were assigned to treatment conditions based on intact predetermined groups). Ss were pre- and post-tested on the Slosson Oral Reading Test and a teacher-made comprehension test	(1) There was no significant difference between teacher-taught and peer-tutored groups on word recognition or reading comprehension scores. (2) Students taught by teachers using data-based instruction scored higher on word recognition than students not using data-base instruction taught by peers or teachers. (3) There were no significant differences between reading comprehension scores of students taught using data-based instruction and students taught not using data-based instruction.

(table continues)

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REFERENCE	TYPE OF DESIGN	SUBJECT AREAS	DESCRIPTION OF TUTORS	DESCRIPTION OF TUTEES	LEVEL OF INTERVENTION	COMPARISON GROUP	PROCEDURES	REPORTED RESULTS
Mellberg, 1981	Experimental, Group	Reading, arithmetic	Economically disadvantaged adolescents, one subgroup was handicapped (LD and EMR)	Elementary age	7 weeks	No treatment control	Pre- and posttest scores of Wide-Range Achievement Test (Reading Recognition and Arithmetic subtests) were analyzed	Academic achievement was significantly greater for tutors than control group. There were no significant differences between handicapped and nonhandicapped tutors. Tutees taught by handicapped tutor did not differ significantly in academic achievement from tutees taught by nonhandicapped tutors. Apparently, tutees had significantly greater achievement than non-tutored controls. (Author does not make this clear.)
Price and Dequine	Pre-post (anecdotal)	English as a second language	LD students	Non-English speaking students	30 min./day	None	Tutors used Whisman Language Tutor Program to teach non-English speaking students	After several months of tutoring, the tutees started speaking some English. Tutors reportedly gained self-esteem.
Sindelar, 1982	Experimental, Group	Reading	Elementary students	2nd, 3rd, & 4th graders in resource program for reading	20 15-min sessions	Students receiving hypothesis/test instruction from peer tutors were compared with groups receiving: (1) oral reading (OR) practice from tutors (2) word recognition training from tutors (3) hypothesis/test instruction from resource teachers in small groups	Subjects were pretested and posttested on nonstandardized measures of WR, OR fluency, and cloze comprehension and comprehension as measured by the paragraph meaning subtest of the Stanford Achievement Test.	The H/T tutorial group performed significantly better than the WR tutorial group on the cloze comprehension measure. All other comparisons yielded nonsignificant results. Thus, the tutored H/T children scored at least as well as, though not better than, the children receiving H/T small group instruction.

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(table continues)

REFERENCE	TYPE OF DESIGN	SUBJECT AREAS	DESCRIPTION OF TUTORS	DESCRIPTION OF TUTEES	LEVEL OF INTER-VENTION	COMPARISON GROUP	PROCEDURES	REPORTED RESULTS
Singh, 1982	Experimental, Group	Math	11th and 12th graders, LD (Tutors and tutees combined: n=100)	9th and 10th graders, LD	15 min. per day, 4 days per week, 9 weeks	No treatment control	Pre- and posttest scores of California Achievement Test (math computation and math concepts/applications subtests were analyzed for tutors and tutees)	Tutees made significant gains on both subtests over non-tutored LD students. Tutors made significant gains on concepts/applications subtest over non-tutored LD students.
Swenson, 1975	Experimental, Group	Arithmetic	Group 1: "Slow learning" 4th grade boys integrated in regular classrooms n=24 Group 2: High achieving 4th grade boys, n=24	"Slow learning" 3rd grade boys "Slow learning" 4th grade boys in regular classrooms.	6 weeks	No treatment control	4th grade subjects were randomly assigned to group 1, group 2, or control group. Pre-, mid-, and posttest measures on sociometric status, self esteem, and arithmetic achievement were taken for each subject.	No significant differences were found between experimental and control groups.
Weiner, Goldman, Lev, Toledano, and Rosner, 1974	Pre-post (anecdotal)	Not specified	4th and 5th graders, n=6, 4 had learning and behavior problems	2nd graders with specific learning problems but with no severe behavior problems, n=6	1 day per week, 4 to 6 weeks	None	Three undergraduate students supervised the tutoring sessions.	Anecdotal improvements in behavior, self concept, and grades of tutors were reported.
Willis, Morris, and Crowder, 1972	Pre-post	Reading	Normal 8th grade	4th grade LD, n=8	30 min. daily, 15 weeks	None	Six students tutored each other under supervision of an older student. Four students were tutored individually by an older student.	Both groups made academic gains greater than expected.
Wingert, 1981	Experimental, Group	Reading	High school students	Elementary school students in self-contained classrooms and resource rooms.	25 min. daily, 10 weeks	No treatment control	Pre- and posttest scores of E-B Beginning Reading Placement Test and Woodcock Reading Mastery Test were analyzed for tutees and control group.	There were no significant differences on WRMT. Tutees made significantly greater gains than controls on E-BBRPT. Tutees mastered at least 84% of all skills taught by tutor.

(table continues)

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EXCEPTIONAL CHILD CENTER
UMC 68

June 13, 1984

Phyllis L. Newcomer, Editor
Learning Disability Quarterly
c/o Beaver College
Glenside, PA 19038

Dear Dr. Newcomer:

Please consider the enclosed manuscript, "Tutoring Interventions with Learning Disabled Students: A Critical Review," for publication in your journal. Four copies of the manuscript are duly enclosed. If you have any questions, please feel free to call me. Thank you.

Sincerely,

Thomas E. Scruggs, Ph.D.
Research/Evaluation Specialist

TES:mmt

Enclosures

APPENDIX R

Beginning Reading II

SAMPLE LESSONS
from
BOOK 1 and BOOK 2

THE EW AND UE COMBINATIONS

LESSON 1

Step 1

When the letters "ew" or "ue" are together in a word, the usually have the "oo" sound as in "boot". For example:

glue **stew**

But sometimes "ew" and "ue" have the "oo" sound as in "cue" and "few". There is no rule to help you to know which sound to say. The only way to learn these words is through practice and memorization.

Step 2

few
cue
blue
flew
knew
stew
nephew
glue
statue
sue
pew
clue
threw
chew
flue
hue
renew
unglue
new
grew
jewel
blew
due
crew
true
view
drew
strewn
mew
strew

LESSON 2

Step 1

Dr.
scissors
guarantee
as
therefore
schedule
use
gauze
already
wound
definitely
minutes

Step 2

wonder
necessary
shriek
could
again
said
might
some
ready
only
through
really
medicine
finger
one

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Step 3

The Adventures of Howard and Lois
Part 3

"I would like to speak with Dr. Drew," said Dad. Dad waited for a minute and then said, "Dr. Drew, this is Mr. Stewart. My little girl, Lois, was bitten on the finger by a mouse a few minutes ago. We wondered if you thought it necessary to bring her in?"

"Did the mouse chew at her finger?" Dr. Drew asked.

"No, we can only see one tooth mark," replied Dad.

"Is it blue around the bite?" Dr. Drew asked.

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"A little," said Dad.

"You better bring her to my office and let me look at it," the doctor told Dad.

"You really think it is necessary?" asked Dad.

"Well, she definitely needs a tetanus shot; therefore, I might as well take a look at it," said Dr. Drew.

"Thanks, Dr. Drew. Can you fit us into your schedule? Good. Come on, Lois. The doctor would like to look at your finger."

"I don't want to go to the doctor," shrieked Lois again. "Please, Daddy, don't make me go to the doctor. Please, Mommy, I don't want to go to the doctor. I already feel better. I'll stop crying in a few minutes."

"Lois, you have to go. Come on."

At the doctor's office, Lois went into a little room, and pretty soon Dr. Drew came in to take a look. He squeezed the bite very hard to make it bleed and then scrubbed it with soap and water. He put some medicine on the wound that smelled like glue and covered it with gauze. Then he took some scissors and cut some tape to hold the gauze in place.

Lois said, "Peeuuu, that medicine smells like glue."

"Don't worry about the smell; there are few medicines for bites as good as this one," said Dr. Drew.

"My nurse, Sue, will give you a shot to make sure you don't get sick from the bite. I think the mouse had a good reason to bite you. If I were a mouse, I'd try to bite you, too. Never play with wild animals again, will you Lois? They could hurt you very badly. You were lucky this time. It won't take long, and I guarantee you will be as good as new. You'll be ready to use that finger again in less than a week," said Dr. Drew.

"Thanks, Dr. Drew, for fixing my finger all better. I'll never play with wild animals again," replied Lois.

Step 4

1. Why did Mr. Stewart call Dr. Drew?
2. What questions did Dr. Drew ask Mr. Stewart?
3. Tell me the story in your own words from the part when Mr. Stewart told Lois the doctor wanted to look at her finger.

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REVIEW CHECK #6

Part 1

Group 1	stime	strilp	vide	thipe	shome	milp
Group 2	meap	fent	weent	fex	voant	stroamp
Group 3	krold	ming	snold	frold	mald	vold
Group 4	coth	cish	ceth	ricim	bracit	cath
Group 5	stamb	fub	slomb	famp	slimp	namb
Group 6	knith	knas	kam	knish	knam	kox
Group 7	gillet	gelit	strig	sigim	mog	illigim
Group 8	writh	wrish	wras	wust	wrint	wrop
Group 9	gry	glay	ny	smay	kray	smy
	ronkey	fey	mly	whay	thay	chy

Group 10 "For this group of words, read each word twice. First read the word using the most common sound for y; then read it again using the other sound of y."

	prady	chingy	zinky	matrify	mengy	prathy
	smylit	hyfrum	myshin	pyclop	snypht	fystoc
Group 11	prim	nerk	fram	furmp	rif	stirker
Group 12	goiter	broil	pound	loin	shout	pouch
Group 13	look	broom	moose	hoot	stood	took
Group 14	threw	true	knew	flew	glue	stew

Common Word Segments

UNIT TEST

Part 1

ab	able	ace	ack	ad	ade
ag	age	aid	ail	ain	air
ake	all	am	ame	amp	an
and	ane	ang	ank	ant	ap
ape	ar	ard	ark	arm	arn
art	ase	ash	ast	at	atch
ate	ave	aw	ay	aze	dis
each	eak	eal	eam	ean	eap
eat	eck	ed	ee	eed	eel
een	eep	eet	eg	ell	elp
elt	em	en	end	ent	ep
ess	est	et	ew	ib	ice
ick	id	ide	ife	iff	ift
ig	ike	ilk	ill	im	in
ine	ing	ink	ip	ipe	ire
iss	it	itch	ite	ive	ix
ment	oad	oan	ob	ock	og
oil	oke	old	ole	one	ong
op	ope	ork	orn	ose	oss
ost	ot	ox	oy	ub	uck
ud	ue	uff	ug	ull	um
ump	un	unch	ung	unk	unt
up	urn	ush	ust	ut	ux

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Part 2

alk	ange	are	arge	aste	ation
ible	ief	ield	ight	ild	ind
le	ore	ought	ould	sion	tive

APPENDIX S

Attitude Measures

Y N 1. I do as well as most students in my classes.

Y N 2. In school my teachers go too fast for me to understand them.

Y N 4. My teachers give too much homework.

Y N 5. I like to do homework.

Y N 6. I like my teachers.

Y N 8. My teachers misunderstand what I say

Y N 9. My teachers pay attention to me.

Y N 10. School is a waste of time.

Y N 11. School grades mean a lot to me.

Y N 12. Homework assignments are too difficult.

Y N 14. My teachers pick on me.

Y N 16. Most books we read in school are for younger people.

Y N 17. I enjoy reading.

Y N 18. I like to read magazines.

Y N 19. I like to read comic books.

Y N 20. I like to read the newspaper.

Y N 21. I read only in school.

Y N 23. I like to read love stories.

Y N 24. I like to read adventure stories.

Y N 25. I like to read sports stories.

Y N 29. I like to use the library.

Y N 34. I bring books to class.

Y N 35. I stay home from school when I can.
Y N 36. I get bored in class.
Y N 38. Mathematics is useful.
Y N 39. My friends think reading is a waste of time.
Y N 40. I enjoy reading to younger kids.
Y N 41. School books are too difficult to read.
Y N 42. The public library is boring.
Y N 44. I can answer questions about what I read.
Y N 45. I like to tell people about what I read.
Y N 47. I like to talk about TV programs.
Y N 59. There are too many rules at school.
Y N 60. My friends help me with school problems.
Y N 61. Teachers will help you when you need it.
Y N 62. Other kids pick on me.
Y N 63. I am friendly.
Y N 65. I get poor grades.
Y N 69. The folks at home ask me about my report card.
Y N 70. I think I'll be a success.

APPENDIX T

Diagnostic Tests

Diagnostic Tests

PRETEST 1 — PART 1: PRODUCING SOUNDS

Consonant Sounds

Student Directions (read to the student): "When I point to a letter, tell me what sound the letter makes. For example, if I point to the letter *z*, make the zzzzz sound. If you don't know the sound, say, 'I don't know.' Don't worry if there are some sounds you don't know."

n	f	s	m	r
l	t	p	c	b
g	d	h	k	x
y	j	v	z	w

1

Short Vowels

Student Directions (read to the student): "When I point to a vowel, you tell me the short sound of that vowel. If you don't know the sound the vowel makes, say, 'I don't know.' Don't worry if there are some sounds you don't know."

a	i	u	e	o

2

Digraphs and Combinations

Student Directions (read to the student): "When I point to the letters, you tell me what sound the letters make when they are together. If you don't know the sound, say, 'I don't know.' Don't worry if there are some you don't know."

th	sh	ch	wh	qu

3

PRETEST 1 — PART 2: BASIC SIGHT WORDS

Student Directions (read to the student): "When I point to a word, read the word out loud. If you don't know a word, say, 'I don't know it.' Don't worry if there are some words you don't know."

I	the	you	is
Is	that	my	see
said	to	are	this
where	there	was	were
they	he	have	could

4

PRETEST 2: DECODING

Student Directions (read to the student): "The words on this page are not real words; they are what we call nonsense words. I want yo to try to sound out these nonsense words. Don't worry if there are words you can't read; just day, 'I can't read that one,' and go on to the next one."

Note: If the student misses eight or more of the nonsense word in any group, discontinue administration of Pretest 2 and proceed to Pretest 3.

Group 1

luf heg jit wex dap vin 5

Group 2

shink nesh thang whub fick 6

Group 3

slef stath brum clack blun 7

Group 4

chast nill zist melp bint 8

Group 5

strant prant spint shuft tremp 9

Group 6

branlemming whumfan fladstill 10
plonslam clunshet mokling

PRETEST 3: ADDITIONAL SIGHT WORDS

Note: If the student is six years of age, administer Pretest 3 at the second meeting with him.

Student Directions (read to the student): "When I point to a word, read the word out loud. For example, if I point to this word (point to *be*), you say, be.' If you don't know a word, say, 'I don't know it.' Don't worry if there are some words you don't know."

away	be	blue
does	do	down
four	from	funny
easy	day	of
his	how	into
look	her	me
our	idea	or
among	play	pretty
she	so	take

PRETEST 3—ADDITIONAL SIGHT WORDS (Continued)

walk	we	what
after	again	always
been	before	both
clean	cold	done
eight	every	fall
full	gave	those
grow	hold	hurt
keep	kind	know
made	make	many
new	off	old
out	over	own
round	ride	shall
soon	their	these

12

PRETEST 3—ADDITIONAL SIGHT WORDS (Continued)

upon
work
put
another
while
word
name
seven
knew

use
would
people
different
might
either
picture
begun
change

warm
yellow
through
between
thought
same
second
almost
become

13

DIAGNOSTIC TEST 2: BASIC SIGHT WORDS

this
there
busy
five
day
his
now
say
who
before
clean
first
hurt
may
over
sleep
warm
put
might
story
number

is
was
away
fly
of
how
once
she
your
both
cold
found
keep
much
own
some
wash
people
thought
sure
name

Is
were
be
for
good
into
our
so
about
brown
done
full
kind
myself
please
soon
why
through
enough
knew
picture

DIAGNOSTIC TEST 3: DECODING

branlemming
drezquit
thexcon
whummang
clunshetted
blentnink
fladstill
chenprib
tradstill
plonslam
yakling
thexprum

DIAGNOSTIC TEST 4: PHONETIC SKILLS

Group 1	nid	grabe	jute
Group 2	pref	beeg	meash
Group 3	jold	vold	soth
Group 4	cas	cet	cint
Group 5	stum	vomb	stramb
Group 6	kot	knam	kimp
Group 7	bidger	meg	madger
Group 8	wakket	wrog	wribbet
Group 9	bly	tay	gly
Group 10	tabby	fronky	mopperty

DIAGNOSTIC TEST 5: MODIFIED VOWELS

Group 1	furt	darm	mork	ler	mirm
Group 2	clown	couch	count	spoil	now
Group 3	doom	hoof	stool	hoot	boost
Group 4	chew	hue	flew	cue	pew

DIAGNOSTIC TEST 6: WORD SEGMENTS

teration
dight
bould
pield
farge
sild
krought
shantive
daste

DIAGNOSTIC TEST 7: MULTIPLE-SYLLABLE WORDS

undoubtedly
mathematical
congratulate
nevertheless
pumpernickel
simplicity
instructional
exceedingly
subtropical

DIAGNOSTIC TEST 8: SIGHT WORDS

Part 1

field
adventures
chocolate
other
board
blood
neither
science
bear
medicine
care
move
wanted
okay
ago
break
heart
toward
furniture
instead
phone
ourselves

Part 2

we'll
child
brilliant
magazine
notice
marriage
against
answer
become
cause
again
don't
wouldn't
ahead
basis
astronaut
heaven
imagine
liable
sufficient
united
tournament
loose
we've
isn't
wasn't
breath
curiosity
conscious
thieves
these
unit
geography
guide
irresistible
museum
he'll
they've
doesn't

DIAGNOSTIC TEST 10: READING RATE

Ike was sick of sitting around the house. He had been watching T.V. all day. He was sick of watching T.V. There just wasn't anything fun to watch. Ike asked his mother if he could go over to Mr. Blake's field and fly his kite. His mother asked, "How far is it?" Ike answered, "Nine blocks." "Yes, you may go if you are home by dinner time," she said. Ike ran out of the house as fast as he could run and jumped on his bike.

When Ike got to the first stoplight, he saw his friend, Zeke, coming out of the drug store.

APPENDIX U

Teacher and Student Survey

Logan/Cache

Teacher Survey

1. Do you think tutoring is a good idea in special education?

2. Do you think your students benefited from this project?

3. Do you think tutoring could help improve social skills?

4. Can you think of any other applications (besides reading) for which tutoring could be helpful?

5. Do you think the materials we employed were appropriate?

6. Can you think of any limitations of tutoring interventions as applied in special education?

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